PatternMaker Software

Macro Generator

A tool for custom tailoring

Manual MacroGen 4.5

MacroGen 4.5

Printed: februari 2015 in (whereever you are located)

Publisher

PatternMaker Software

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Special thanks to:

Gary Pickrell and Lane Holdcroft who worked so hard to provide Professional Designers a very professional tool to make our own commercial macro's. This is the start of a new "sewing century".

Thea Botter

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1 Start

1.1 What is MacroGen?

MacroGen is a visual programming tool for creating macros in the PatternMaker macro language. MacroGen is a companion tool for the Professional/Home, Grading, or Marker versions of PatternMaker from PatternMaker Software. *PatternMaker* combines the power and flexibility of CAD-based drafting programs with the ease-of-use that new users find helpful. It is intended for pattern making professionals who need to create patterns in multiple sizes and especially those wish to market their designs to the public in a computerized format.

What does MacroGen do?

PatternMaker uses "macros" to draw pre-designed, custom-fit garments for users who do not have enough experience with pattern drafting to draw a pattern from scratch. A macro is an automated series of commands -- a program -- that tells PatternMaker to draw points and lines and connect them in a way that creates pattern pieces. MacroGen allows pattern designers to quickly and easily translate their designs from paper to a macro which can be read by the *PatternMaker* program. Not only a pattern, but illustrations, fitting rules and user style choices are programmed in. When a *PatternMaker* user runs the macro, it drafts a complete custom-fit garment pattern, ready to print.

But what do I do first?

This manual is intended as a reference guide rather than a textbook. To learn how to use MacroGen, read over this manual quickly, then do the MacroGen tutorials.

MacroGen is a professional tool for pattern makers to program pattern drafting and fit methods. For simple shapes you do not need expert knowledge of pattern drafting, programming, PatternMaker macros, or the PatternMaker software package to get started with MacroGen, but you must have some familiarity with them. At the minimum you should:

- Install PatternMaker (Professional/Home or higher version), and know how to use it to draft a pattern. Have the PatternMaker manual available as a reference.
- Know how to run existing PatternMaker macros, and be aware of what they can do.
- Be familiar with the concepts and techniques of flat pattern drafting. MacroGen will not tell you, for example, how to determine where a point should be added, but it will help you with how to add it, once you have determined where it belongs.
- Have math skills at least at the basic algebra level: X-Y coordinates, positive and negative numbers, angles, and simple algebraic equations like 2X + 3Y = Z.
- Have common Windows user skills such as opening and saving files, using pull-down menus, cutting and pasting text and should understand terms such as double-click, menu bar, and dialog box

But the most important prerequisite for working in MacroGen is that you must:

- Be VERY familiar with the pattern, measurements, and construction steps you are going to program.

For more complex macros you do need pattern making skills!

Try asking yourself the following questions:

- How many actual pattern pieces will make up the final pattern? How many PatternMaker drawing objects?
- Can I describe exactly, in algebraic (equation) or geometric (lines and angles) terms, where to place every point of every pattern piece?
- Does it matter in what order I calculate these points?
- Which pieces will involve offering style choices to the user?
- Does it matter in what order these choices are offered? (Bodice silhouette before sleeve options? Sleeve

options before cuff options?)
- What body or garment measurements will I need the user to enter?
- Will the user understand my instructions?

If you have answers to these questions, then you can move beyond the tutorials and start programming your own patterns.

What is new in Macrogen

- Points and Measure areas have Notes 53
- The outlook of many Points and Measure forms have been redone
- Style Pictures are in the style tree
- Dependent Measures are in the style tree
- MacroGen runs faster because it buffers unchanged values. See Refresh 168
- The Master Measurement Table form has been simplified

1.2 What can I do with MacroGen?

MacroGen is a visual programming tool for professional pattern makers to turn your designs into patterns that you can sell to the public. You create not only the pattern but the fitting method, so customers get, in effect, a supply of custom-fit patterns with no special knowledge required on their part. As the seller, you are freed from the tyranny of printing and distributing paper patterns--you can sell all your patterns over the Internet.

You can create a pre-designed garment (a "macro") that runs in PatternMaker:

- Prompt for user's measurements (ex. "Bust Circumference"). See Prompted Measurement 53.
- Prompt for garment design measurements (ex. "length from waist"). See Prompted Measurement 53.
- Patterns can be as simple or as complex as you wish.
- Use whatever pattern drafting system you prefer.

You can add variety and flexibility to your pattern:

- Create style options for any pattern piece (such as neckline or sleeve choices).
- Help the user choose from among the possibilities by including a picture of each option. See Style Picture 35.
- Styles can be included or excluded depending on which previous options were chosen. See Style Exclusions 37.
- Edit a style in PatternMaker to create a new style without re-drafting. See Editing in PatternMaker 22.

You can generate an executable installation file (use the separate program Collection Creator for these):

- Display your name and contact information.
- Add a registry entry to help protect against unauthorized use (macro file must be installed, not simply copied).
- Include any pattern documentation files you've created .

Join the network of designers whose patterns are being used around the world!

How does it work?

Compare a custom-made garment with ready-to-wear (RTW). The RTW garment uses more or less standardized measurements for each size. The back length measurement, for example, is a fixed number for size small, for size medium, and for size large. When the same garment is custom-made, the dressmaker or tailor will measure the subject and then use the person's actual back length measurement, ensuring a much better fit.

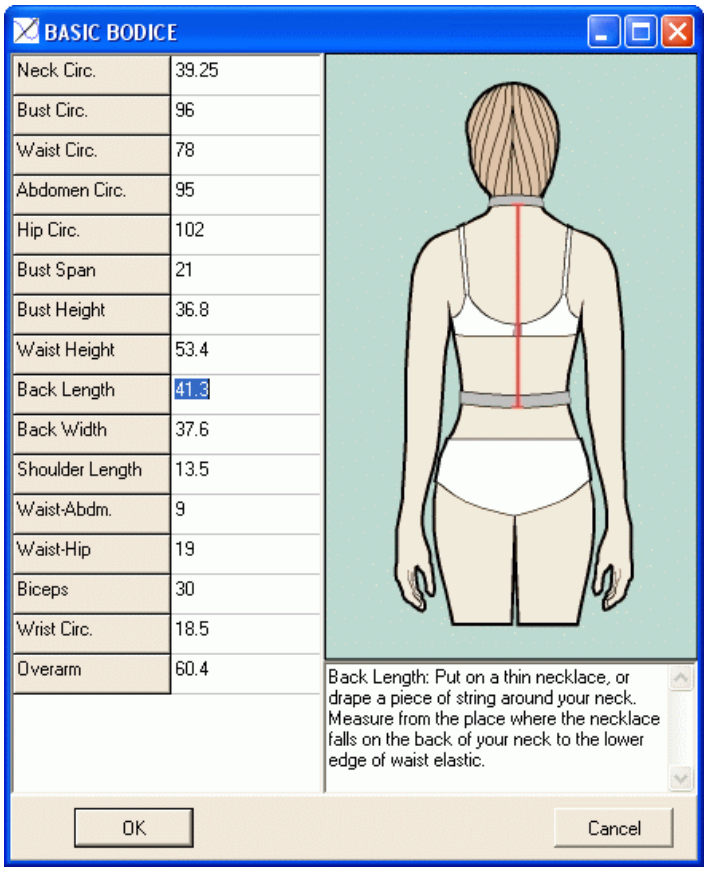


Figure 1: a macro dialog box

The process of creating a macro is similar to drafting a pattern for a specific person -- use the person's body measurements to determine the distance from one point to another. However, in MacroGen, since you don't know what the user's measurement will be, you use a variable called "Back Length" to define the length from neck to waist.

The variables you define will be the same as the measurements you would take if you had a "live" subject in front of you. Variables can include: bust circumference, waist circumference, arm length, inseam, crotch depth, etc. When the macro is run, the user will fill in his/her measurements, and then the program plugs those numbers into the "spaces" left by your variables.

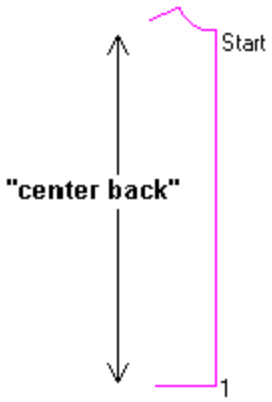


Figure 2: using a variable

Points are plotted using a Cartesian (X-Y) coordinate system. The origin is a built-in point called "Start." Beginning with the Start point, all other points are placed relative to at least one other existing point. For example,

if you use the Start point as the center back neck, the next point you place might be the center back waist. If you were making a RTW garment, you might make that point a fixed distance of 16-1/2" (41,5 cm) down from the center back neck. In MacroGen, you tell the program that this point is "center back length" down from the neck -- whatever the person's center back length happens to be, that number gets plugged in, and the point is drawn accordingly.

1.3 Work Flow

The steps in creating a MacroGen macro are:

Preparation (plan your design)

- Design a pattern (it is helpful to begin with a sloper as a start for your designs)
- Design fitting rules and define the measurements that go with the rules.
- Prepare complete drafting instructions for your pattern

The above steps should be done on paper before you start work in MacroGen. They are a great deal of work, but MacroGen lets you reuse your work. For most patterns, you will use existing fitting rules and once you have set them up in your MacroGen project (for instance, translating a commercial fit rule to MacroGen), you can import the measurement tables into each new project.

MacroGen

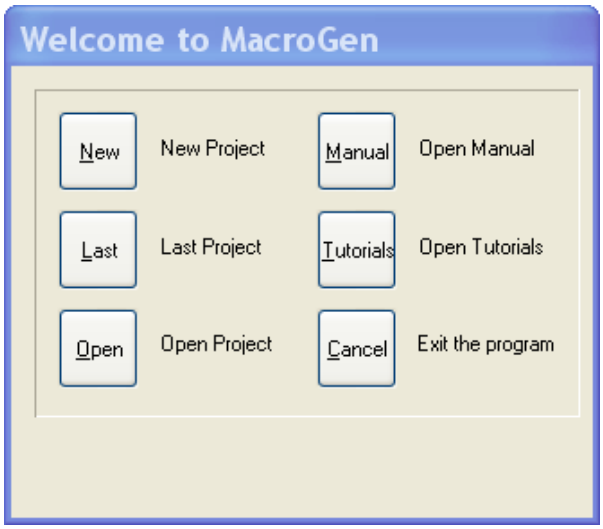
- Define the measurements that the user must input (it is helpful to input all the measurements from your drafting system, even if you won't use all the measurements for this particular pattern)
- Define the points the macro must calculate. This includes intermediate steps that won't actually be drawn.
- Do internal calculations, mostly by defining special measurements and points.
- Define the objects that the macro will actually draw
- Define the style choices available to the user for each piece (style tree)
- Build the objects by connecting points
- Add illustrations and other help for the user
- Output a macro file

Afterward

- Once the macro is created, use the Collection Creator to prepare your macro for release to the public. This program is available through PatternMaker Software. It allows you to turn your macro(s) into a professional program that installs on your customer's computer. Collection Creator allows you to set a password for installation.

1.4 Getting Started

Once you have a plan, open MacroGen and select "New Project" at the first window.



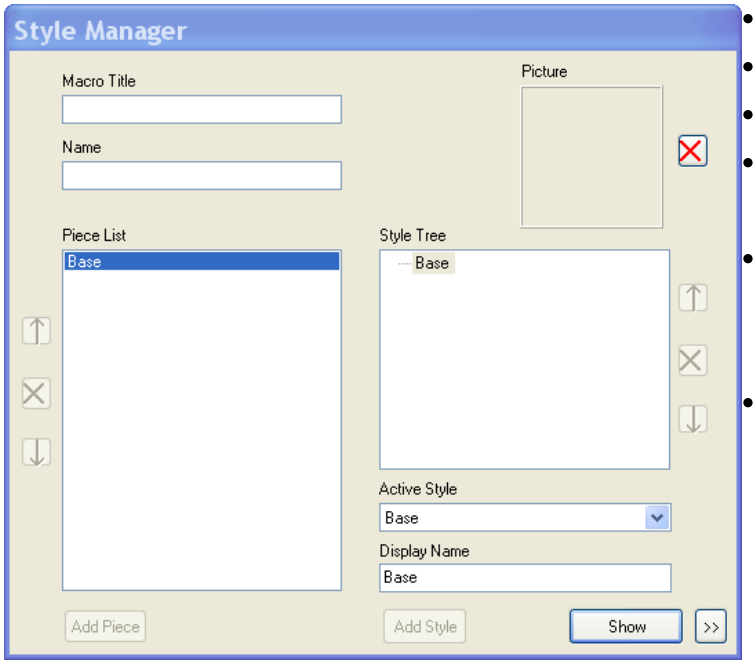
From this form you have also easy access to the project that was opened the last, another saved project, the manual of MacroGen 4.5 or the tutorials

Projects

In general a MacroGen project includes all the work you have open in the MacroGen program at one time, and it corresponds to a single project (*.mg4) file. A project also corresponds to a single macro (*.mac) file. If you have a very complex project with multiple garments and styles, it will save as one *.mg4 file and create one macro. If you have several, related macros with different *.mac files, each one will be a separate *.mg4 file.

Use Style Manager

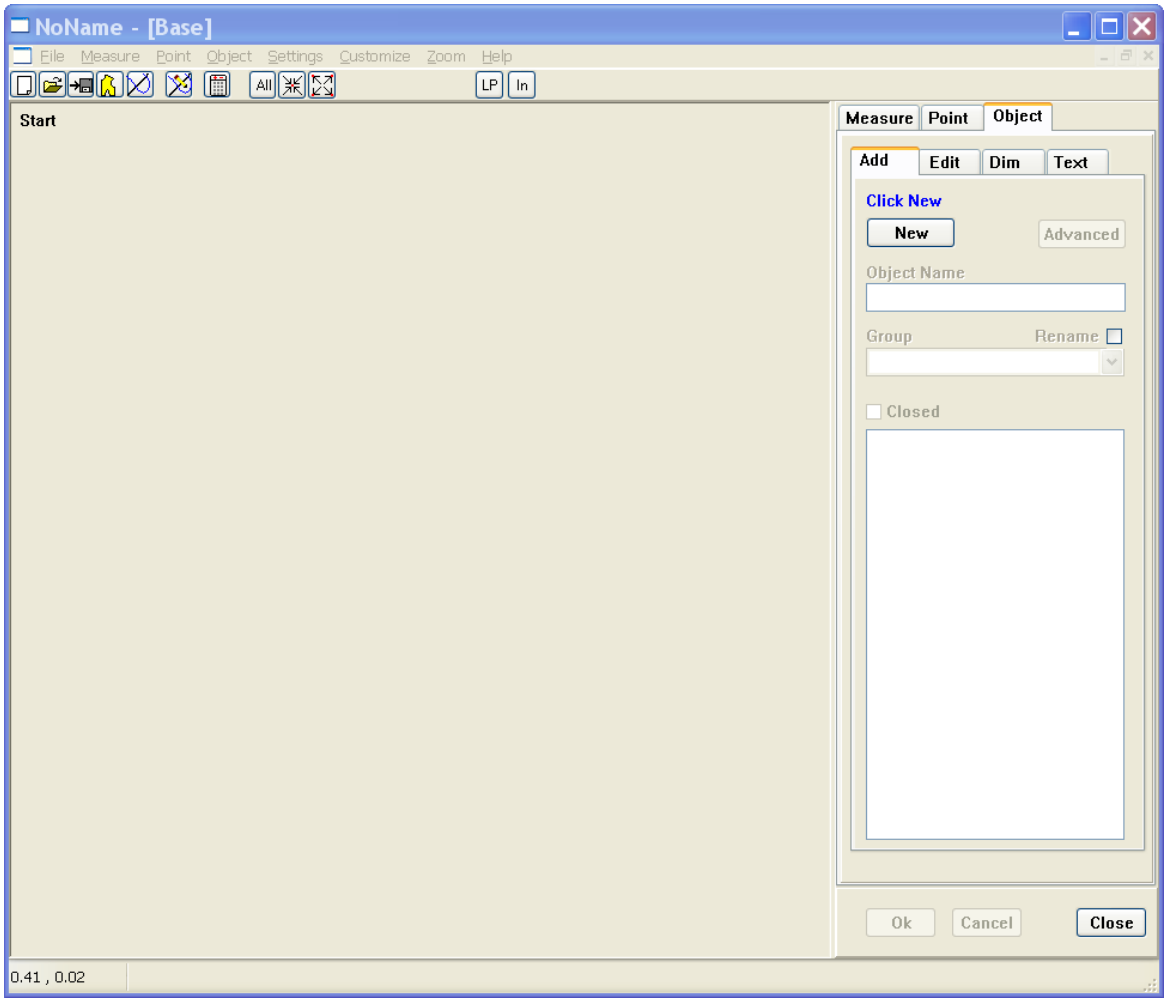
See Style Manager 26.



- Enter the name of the first piece
- Enter the styles you want to create
- Repeat for other pieces
- In the Piece List, highlight the first Piece. In the Style Tree, highlight the top level of the "tree."
- Click the "Show/Hide" button below the Style Tree.
- The Pattern Area of the Style window opens.

The Pattern Area of the style

It will be empty except for the word "Start" in the upper left corner.
On the right side you will see the Tab form for adding/editing your Measurements/Points and Objects



Enter Prompted Measurements

See Prompted Measurement 53.

- Open the the Measure tab on the right side and then select the Add tab->Prompted measure
- Type the name of the measurement you wish the user to enter (this name will be displayed to the user)
- Type the default number (these will be replaced by the user's numbers)
- Save to a measurement table, if desired

Enter Points

See Working with Points 84.

- Review the X-Y coordinate format and grid concepts
- Open the Point tab on the right side and select the Add tab. The Coordinate point type is your first point relative to the Start point to enter
- Enter additional points
- The position of a point relative to another point can either be a variable measurement ("one-quarter of the waist

measurement"), which is derived from the values the user enters when the macro is run, or it can be a fixed, unchanging amount ("exactly two inches from this other point")

Draw the Object

See Working with Objects 117.

- Open the New Object form (Tab Object->New)
- Connect the points with lines and curves
- Add notches or other pattern markings, if desired
- Add seam allowance, if desired
- Add descriptive text

Set Style Options

- Add pictures to each style in the style tree
- Set exclusion rules See Style Exclusions 37.

Save and Test the Macro

See Test Macro 21.

- Convert the file to a macro
- Test or edit the macro in PatternMaker Professional/Home or higher version

Prepare Macros for Distribution (Use the Collection Creator for these)

- Enter designer information and copyright/licensing information
- Use the Collection Creator to create an executable setup file

1.5 Menu structure

In MacroGen 4.5 you will find several menus to access all the commands.
In reality you will not use a couple of these menus, because an easier way of selecting the commands has been made by the Tab panel in the Pattern Area or the icon bar on top of the screen.
To be able to explain MacroGen better we follow this way also in this Help file.
This means that you will find more information about:

- File: File menu 18
- Measure: Working with Measurements 51
- Point: Working with Points 84
- Object: Working with Objects 117
- Settings: Settings menu 148
- Customize: Customize 161
- Zoom: Zoom Functions 49
- Help: Help menu 166

1.6 If You Need Help

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website: www.patternmade4you.nl
e-mail: info@patternmade4you.nl

Part 2

File Menu

2 File Menu

The File menu contains functions related to projects, file operations, and external programs.

2.1 IconBar

The main toolbar's icons are functions from the File and Zoom menu:

- New
- Open
- Save
- Create Macro
- Test Macro (View Macro in PatternMaker)
- Launch PatternMaker (Edit Macro in PatternMaker)
- Calculator
- Zoom All
- Zoom In
- Zoom Out

see File menu) 18 and Zoom Functions 49

The main icon bar (toolbar) in MacroGen version 4.5 no longer contains icons for all pull-down menu commands and all Measure and Point types, as it did in MacroGen 3.
For Measure and Point icons, see Tab Point 45 and Tab Measure 44.

2.2 New


The **New** function starts a new MacroGen project with no filename.
It works like the New functions in many other programs. Since MacroGen does not support multiple project windows, you are prompted to save your work before the current project is closed.

2.3 Open


Open opens a MacroGen project from a file.
It works like the Open functions in most Windows programs. MacroGen project files have a *.mg4 filename extension. Only one drawing can be open at a time. Opening a file replaces the project currently on the screen.

2.4 Save

You have several options when it comes time to save your work.

 The **Save** command works as is typical for other Windows programs.

MacroGen will automatically create a folder **Designers in My documents/PatternMaker/personal files**, when you save a project for the first time with MacroGen 4.5
When you want to save a project after that, the folder Designers will be opened automatically
Using Save also automatically saves your project in the current folder with the existing name, if any. If you have not previously saved the active project, this command acts like Save as 19.

Note: When you want to make use of the Collection Creator for making setups of your macro in the future we advise you to save your projects in the folder Designers. See for more information to the Help of Collection Creator.

The *Save As* command allows you to give the project a different name. You can also select a different location to which the file will be saved, although we do not recommend this.
Save only saves your MacroGen project work (*.**mg4** file format). It does not create a macro or save ancillary files such as Measurement table 72 and images. The Macro command is different--it converts your drawing to the format required by PatternMaker. You can save a drawing as a macro even if you have not yet saved your project file.

2.5 Save As (new file name)

Saves as gives a project file a name different from its current name; save changes to a file without replacing the original file

This function works like the Save As... functions in most Windows programs. The only format available is the *.mg4 Macro Project format. See also Save 19
The *Save As* command allows you to give the project a different name. You can also select a different location to which the file will be saved, we do not recommend this.

2.6 Export Project

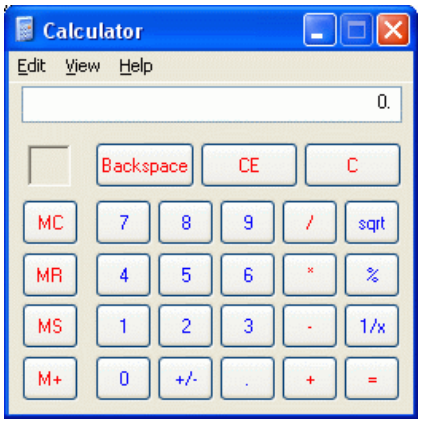
Use **Export Project** to transfer a project to another computer. Your .mg4 file and all support files are put into a zip file that can be imported 19 on the other computer. See File Structure 24 for more information about support files and their locations.

2.7 Import Project

Use **Import Project** to transfer a project from another computer to this computer. See Export Project 19.

2.8 Calculator

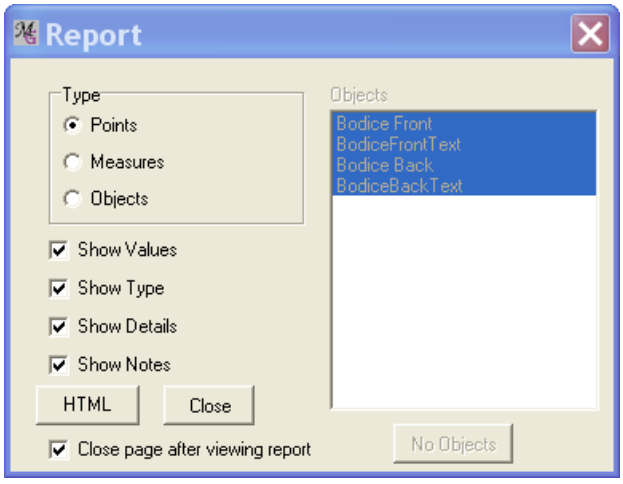

The **Calculator** function brings up a calculator program.



This is for your convenience when working out computations for your macro project. The calculator is separate from the rest of your MacroGen project and does not put anything into the macro.

2.9 Report

The **Report** function creates a variety of printable reports on points, measures, and objects in your project, in table form. Use these reports to double-check your work and to document your projects for your archives.
This function is still in development and report formats may vary.



Procedure:

1. Open a Style that you want to run a report about.
2. Click File->Report.
   In the report dialog window, select which type of report you want to make. You can make reports of three types:
   - Points
   - Measures
   - Objects
3. Select which options to include in your report:
   - Show Values - The values of the points/measures
   - Show Type - The type of the points/measures
   - Show Details - The parameters used to calculate the points/measures

- Notes - Any notes you provided on the points/measures See Notes 53

4. Click on the HTML button.
5. The report form opens and you can view or print the report.

Repeat these steps for every type of report you want.

The report is created as an HTML table that can be exported into an Excel spreadsheet.

Note: When you select an Objects report you can choose a specific object from the list in the report form. This function is only available when you select the Objects Type of report.

2.10 Purge Unused

Purge deletes all points and measurements that are not used by an object.

Sometimes when designing a macro, a measurement or point is created that becomes obsolete or is not used in an object. This can be because a style *was removed or can be due to a fundamental design change*. Calculating using these obsolete items slows down MacroGen. The Purge Unused menu item checks each point and measure to see if they are used by a point, measure or object. If they aren't, it deletes them, then repeats the process. This way MacroGen gets rid of all unused points and measurements.

***NOTE:** Be careful with using this command because it could delete points or measurements which are not used by an object, but have been made on purpose by the designer to check or recalculate the project.*

To make the macro faster it is advisable to use purge just before release of the macro.

2.11 Create Macro

 **Create Macro** creates a PatternMaker macro (.mac) from the current project.
This is the ultimate output of your MacroGen work. The name of the macro is always the same as the project file name, with ".mac" as the filename extension. The .mac file is saved in the same folder as your .mg4 file.

Procedure:

There are two ways to select this command:

- Click the "MAC" icon in the toolbar 
- Select **File->Create Macro**

2.12 Test Macro in Patternmaker

 **Test Macro** starts the PatternMaker program and runs your macro. You can test your macro and see if you are satisfied with the results(the drawing, the calculations, the used measurements).
The PatternMaker version that runs is almost the same as the standard Professional/Home version of PatternMaker, with the following differences:

- You can only test a macro when you have made an object.
  When not, there is nothing to show (a drawing) in PatternMaker.
- PatternMaker runs as a child process of MacroGen, meaning that you must exit PatternMaker to go back to MacroGen.
- The macro you are working on starts immediately. You do not need to select PatternMaker's Macro command or choose a macro file.
- Your macro project is piped directly into PatternMaker. This means that you do not need to save a macro file before testing, and the macro that runs represents the current state of your MacroGen project (rather than what

you last saved).
- You can test your macro with different measurements to check if your macro works correctly with all kind of measurements.

2.13 Edit Macro in Patternmaker

Edit Macro runs your macro in PatternMaker and then allows you to make edits. Any edits you make in PatternMaker are captured and become part of the macro in MacroGen.
This function is a powerful tool for adding changes to your macro. You can run your macro in PatternMaker, then do other PatternMaker editing operations such as moving, rotating, cutting, or joining pieces. This is very useful for certain operations, such as rotating a piece, that are simple to do graphically but would require tedious work to reprogram point by point.

Procedure:

-  **Use Icon "Edit Macro" or Menu ->File->Edit Macro in PatternMaker .**
  The PatternMaker program starts and your macro begins to run.
- At the prompts, select the style choices you want to edit, note that the measurements are not seen. They are ignored in this edit mode.
- After the macro completes, use PatternMaker's Edit and Points commands to alter the resulting pattern. The allowed commands are a reduced set of the PatternMaker commands.
  They are:

1. Undo
2. Move
3. Copy
4. Mirror
5. Rotate
6. Scale
7. Resize XY
8. Erase
9. Cut
10. Join
11. Move Vertex
12. Rotate Vertex
13. Align X
14. Align Y

You can also use some of the snap modes. Snap actions are preserved in the point definitions of the edited points. That is, if you capture a Snap EndPoint during a move (for instance), the action will snap to the chosen point in the end macro, even if its location changes. The following snap modes are supported (see PatternMaker manual):

1. Snap Center
2. Snap EndPoint
3. Snap Intersect
4. Snap None

- Exit PatternMaker. (do not save the file in PatternMaker)

- MacroGen opens again and you will see the changes you made in PatternMaker in the drawing on the screen . Points, measurements and/or objects can be added to your macro. You will recognize these added points of an addition of (2) behind the point name, or a default new name. See Automatic point types 100 for more information.
-

IMPORTANT: When you run a macro you have to make style option choices. The editing you do to any object will only be made in the selected styles. This means when you have made a style Pocket (= parent) with 2 style options (=children, for instance Straight pocket and Curved pocket)) the change will only be implemented in the selected style Straight pocket (not in Pocket =parent and not in other child = Curved pocket). see more about this in the Style tree 31

Note: *you edit only the style you selected while running the macro.*
This means when you have made children to a parent, you can never edit a parent anymore. It is only possible to edit the child.

Note*: to be able to edit an object it is often necessary to create a temporary object.*
For instance if you want to move an object 5 cm to the left first you have to create the line that will show the move distance. With using snap endpoint you can select the start point and destination point of the created line object. After editing the object you can delete the line because move points have been made into your MacroGen macro.

What Does Edit Macro Do?

When the Edit Macro command completes, it returns to MacroGen a list of commands and command events (inputs) that have occurred. MacroGen uses these events to add new points and objects to the project (remember, they go into the style you selected while running the macro).

MacroGen keeps both old and new/changed versions of points and objects, depending on the used edit command. The newly created points have automatically-assigned names. Points and objects once created have no connection to the points and objects they were created from, and can be edited, deleted, and their definitions changed just like all other MacroGen points and objects.

Editing Macro problems

After cutting or joining objects it can be possible that the grouping of the objects or the Mark for Arrange is not valid anymore.
MacroGen will give a **warning message** when you return back to MacroGen after editing in PM that you have to check the grouping and/or Mark for Arrange.

Object Pocket in Group Pocket has been cut.
Check your grouping and arrange checkbox.

You will also see a **warning** in the first line of the Object Tab

only 1 Arrange per group, see object pocket(3)

The order in which points are made is very important, while editing in PatternMaker.
For instance when you align a point A with Point B, while Point A is made before point B, then MacroGen has problems with this.
In this case a message will be shown:

After Align command in PatternMaker, MacroGen was not able to create a Rectangle point.
Coordinate point 2(2) was created instead.
This is because of the order of the points created in the styles.
Verify that this will work for you.

Undoing edits

There is no Undo feature for Edit Macro. To undo edits, simply delete the new points or objects that were created. It is a good idea to "**save as" your work** before you are editing your macro or before you do major deletions.

See: Automatic point types 100

2.14 Exit

Exit closes the MacroGen program and prompts you to save your work.

2.15 File Structure

When developing a macro the files are stored under My Documents while installed macros are located under Program Files. This allows a clean separation between files under development and production-ready macros. It is important to realize this when running PatternMaker. You'll have to look in a different location for each.

On Windows all files will be stored under MyDocuments\PatternMaker\Personal Files
Here is a list of directories files will be stored in, while developing the macro file:

Designers - MG project file (.mg4), macro (.mac) and style pictures (.jpg) files.

MeasureTables - - The master measurement files (.mmt)

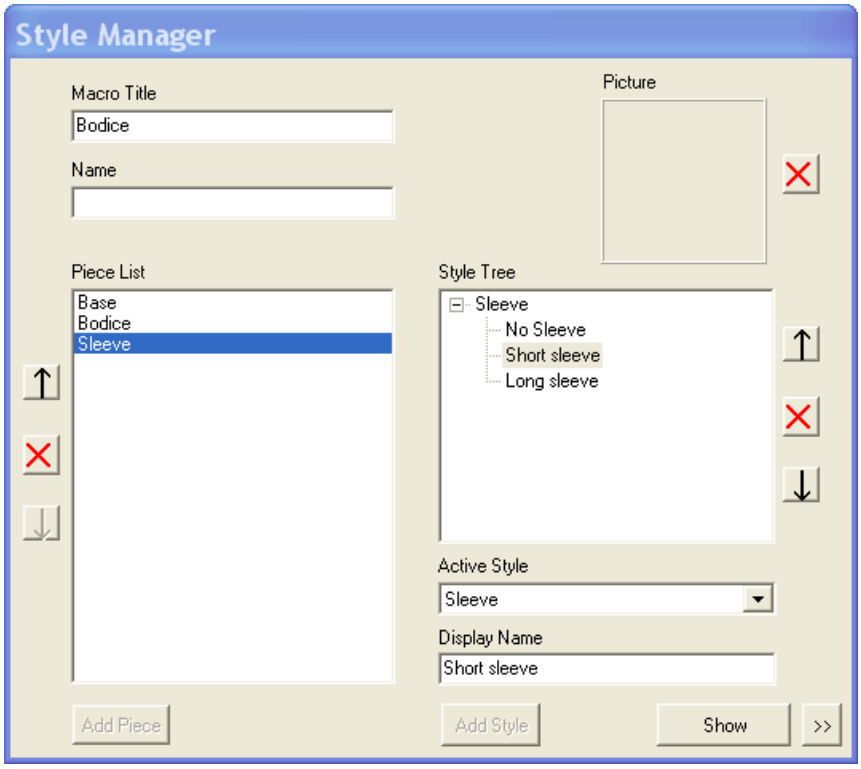
MeasurePictures - The prompted measurement pictures (.jpg) and measurement description (.txt) files. If the measurement belongs to a master measurement file these files will be installed on an users computer in a subdirectory below MeasurePictures with the name of the tables identifier. This allows different measurement tables to use measurements with the same name.

Part 3

Using the Style Manager

3 Using the Style Manager

The Style Manager is the heart of the MacroGen interface. You see the Style Manager when you open a new file or an existing file. It defines everything that appears in the other displays, and you use it to navigate between the parts of your project. The Style Manager window looks like this:



- **Macro Title** 27
  The title that the user sees in the window header when running the macro (not necessarily the same as the macro filename).
- **Name**
  The Name of a Style or Piece to add.
- **Piece List** 30
  Displays all the pieces (see What is a Piece? 159) in the current project. Highlight a piece to see its style tree.
- **Add Piece** button
  Adds a piece to the piece list after the highlighted piece. Type the name to use for the piece in the **Name field.**
- **Picture**
  Click on the square to select a picture file to use for this style.
- **Style Tree**
  Styles are the garment options you offer to the user, such as neckline style, pocket style, or sleeve length. Each piece in the Piece List has its own Style Tree. Each style tree can have branches and sub-branches, where each branch corresponds to a set of choices the user makes via dialog boxes.

  Note: *A Piece that does not have any Style choices will not display a dialog box. This could be, for example, a neck facing. Since it has only one option, the pattern piece will simply be drawn as it is, at the time that the macro is run.*
- **Active Style** 33
  The active style is the style choice used to display all subsequent pieces. Example: suppose a Front Bodice piece has two styles: Sleeveless and With Sleeve, and the style choice affects the location of point "Armscye Corner" (the armscye is smaller in the sleeveless style). The active style (Sleeveless or With Sleeve)

determines where point "Armscye Corner" appears when you display other pieces such as Back Bodice. In other words, the armscye for the back bodice matches the active style for the front bodice. Active Style is only a display option. It only affects the way pieces are displayed in the Piece Display and does not affect the final macro. You can change active styles at any time to see how things will look under different style choices. Each piece has its own active style. The default active style is the root of the piece's Style tree.

- **Display Name** 33
  Sets the window title for this piece's Piece Display window when you run the macro in PatternMaker. The default for this is the piece or style name.
- **Add Style** button
  Adds a style in the Style Tree as a child of the highlighted piece. Type the name to use for the style in the **Name** field.
- **Up/Down arrows and red X's:**
  Use the up and down arrows to reorder the Piece List and Style Tree by moving the selected item up or down (this also controls the order in which the user will see them). The red X icons delete the selected item.
- **Show** button
  Click this (or double-click the name in the Style Tree) to open the Style window for the selected style. It is convenient to view the Style window and the Style tree at the same time. They can be positioned side by side.
- **>> button = Style dependent measure** 56
  Click on the >> button to show the Style Dependent Drawer 36. Hide it by clicking on <<

Click on the underlined hyperlinks above to read more about these topics.

3.1 Start a macro

3.1.1 Macro Title

Purpose:

To give your macro a title

Procedure:

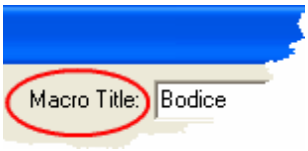
Click your cursor in the Macro Title and type the name of your macro.

Note:

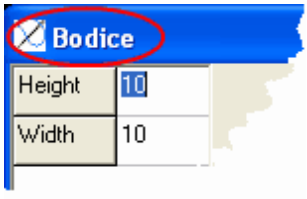
This title is not the same as the name you give your macro with "save or save as", but we advise you to use the same name to avoid mistakes by the user.

Note:

The title in the macro is only visible in the measure form from that specific macro so when it has the same name as the saved macro it is clear for the user.



Input macro title in MacroGen



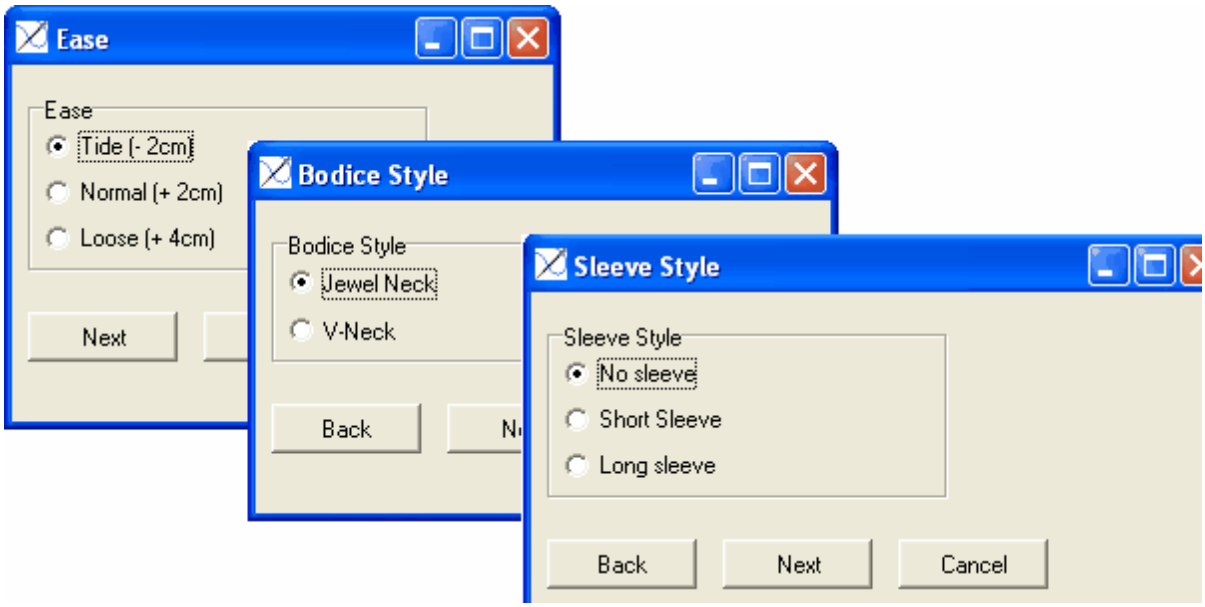
Visible in Patternmaker only in measurementtable

3.1.2 New Piece Name

A piece is anything that will become a literal piece of the pattern. This could include a bodice front and back, the desired ease, a collar, a sleeve, a sleeve cuff, and a pocket. Each of these will be an entry in the piece list.

Example of entries in the Piece List

The entries in the Piece List also determine the dialog boxes that appear when the macro is run. The name of the piece becomes the caption of that dialog box, as in the illustration below:



Example of different style windows schown in PatternMaker

When the macro runs, a dialog box is displayed for any piece that has options. If a piece has no options (for example, a neck facing) there will not be a dialog box displayed.
So when you need a option for a specific piece you need to make a piece for each of this pattern piece.

Example:
When you want options for the neckline on front **and** back then you need to make a piece for the front piece with neckline options and also a piece with neckline options for the back piece. When you want to make only an option for the front neckline you can make one piece for front piece and back piece.

Procedure:

1. Type the name of the piece under Name.
2. Highlight the piece in the Piece List to add the piece after.
3. Click the **Add Piece** button.

After you add the Pieces, you will want to enter Style options.

See also:
Style Tree 31

Deleting a Piece 30

Renaming a Piece 29

Display Name 33

3.1.3 Rename Piece

Purpose:
Change the name of the piece. If you change the name of a piece it will also change the name of the root style in the piece to match.
If you find you need to change the name of a Piece, it is easy to do.

Procedure:
1. Right mouse-click an entry in the Style tree. A small "Piece Name" dialog box opens.
2. Type a new name for the Piece, and click the "OK" button.

Changing the Piece name does not affect the Display name. Check afterwards if the displayed name is also the way you want it.

See also:
Adding a Piece 28

Deleting a Piece 30

3.1.4 Delete Piece

Purpose:
Delete a piece from the piece list.

> ***Caution:*** **This action cannot be reversed! The entire piece and any associated styles will immediately be erased!**

At times you may find it necessary to remove an item from the Piece list. This could happen if you decide not to include a piece in your design, or if you need to change the order in which the Pieces/dialog boxes are displayed to the user when the macro is run. You might want to save your work before you delete a piece.

Note:
If you simply want to give a Piece a different name, see Renaming a Piece .

Deleting a piece:
1. Highlight an entry in the Piece List
2. Click the Delete button next to the Piece List. (Red X)
3. The Piece is immediately removed. There is no confirmation message.

Important:
If you want to delete a piece in which measurements or points are made that are used in pieces after, MacroGen will give you a warning that deleting is not possible because of measurement X or point Y.
It is therefore not possible to delete pieces with important information for pieces after it.

See also:
New Piece Name. 28

Renaming a Piece. 29

3.1.5 Piece List

In the Piece List you see all pattern pieces you need in your pattern. When you have only pattern pieces with no options these pieces will not appear in PatternMaker when you run the macro. However when you add Style options on a pattern piece the piece names will be visible in PatternMaker as a Style option window with your added choices.

Example of a Style Option window in PM

See also:
New Piece 28

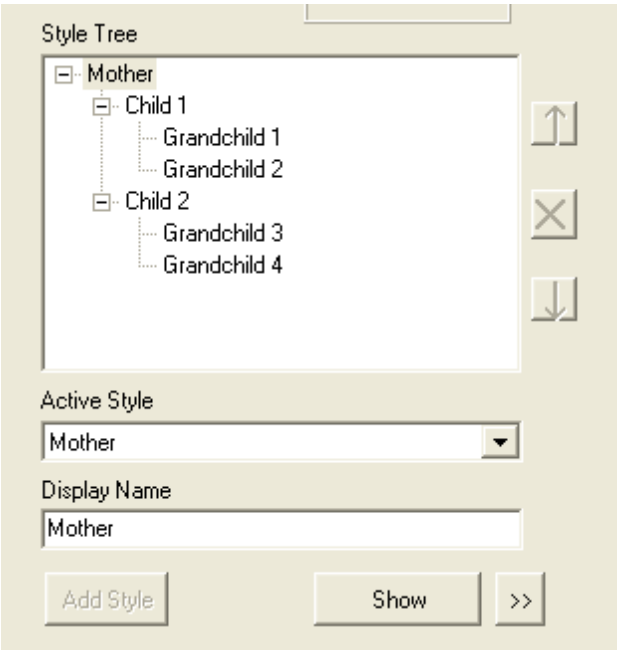
Add Macro Title 27

Delete Piece 30

Rename Piece 29

3.1.6 Style Tree

The style tree is where options for each piece is created. Each style is listed and has it's own set of points and objects. The bottom most styles (Grandchild 1, Grandchild 2...etc) will show up as style options when the macro is run in PatternMaker.



Style Tree

3.1.6.1 New Style Name

Purpose:

Using New Style Name you make style options on a pattern piece.

Procedure:

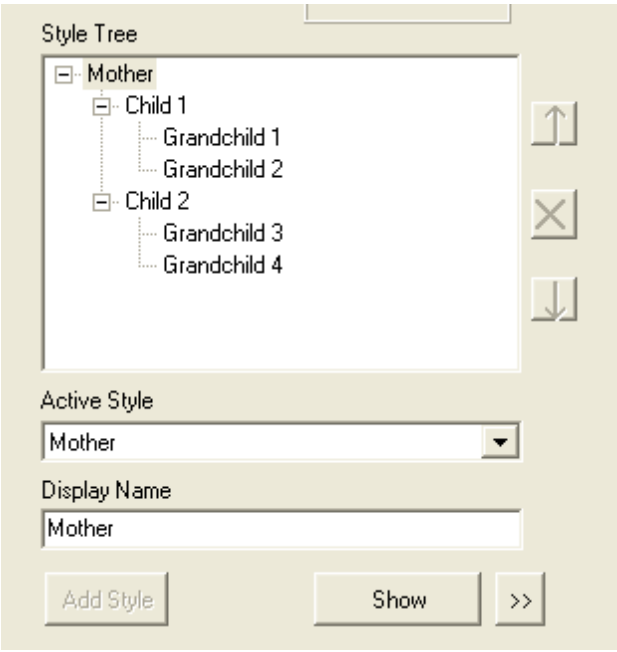
1. In the Piece List, select the Piece to which you want to add a style option.
2. In the Style Tree, select the Style to which you want to add an option. This can be the "top level" style or anything lower.
3. In the Name field, type the name of the new style, and then click the Add Style button.
4. The new Style is added as a new option under the highlighted item in the Style Tree.

3.1.6.2 Mother and Child

Some things are inherited from a main view (parent view) to a sub-view (child view):

- All Prompted Measurements and Distance measurements. These can be used to place any point in any piece and any view or sub-view.
- Points and Objects
- Points created in the parent of any child view appear in black. These points can be used in new objects, and can also be edited if you clear the "Use Parent" checkbox on the Add/Edit/View Point forms.
- Points created in a Piece higher in the macro "path" appear in blue. These points can be used in new objects, and can be used as a reference for a new point (as a "From Point"), but can not be edited in any way.
- Visible/hidden points and objects -- blue points and objects (those from a higher point in the macro path) must be hidden or unhidden in their original view. They will not appear in the "Display Points" or "Display Objects" lists of a sub-view.
- Measurement modifiers (If/Then Logic)

The logic is inherited by default, but you can uncheck the "Use Parent" check-box and edit the logic for every child separately.



Some things are not inherited from a main view to a sub-view:

- Each view window (a style or a sub-style) has its own Start point.
- Style dependent measures 56
- Style pictures 35

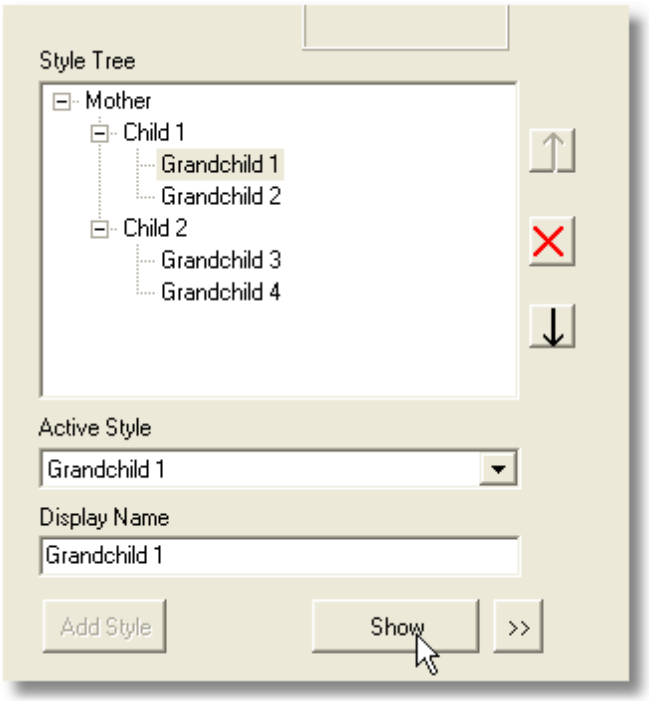
3.1.6.3 Active Style

Purpose:

This feature lets you view different styles in future pieces. This is important because it allows you to view the final piece as it would be drawn in PatternMaker after the user selects their styles. See Active Style Example 176

Procedure:

1. Highlight an entry in the Piece List.
2. Select an option in the Active Style drop-down box.
3. Highlight another entry in the Piece List (somewhere lower in the list)
4. Select a style from the Style Tree and open the style window by clicking the **Show** button.



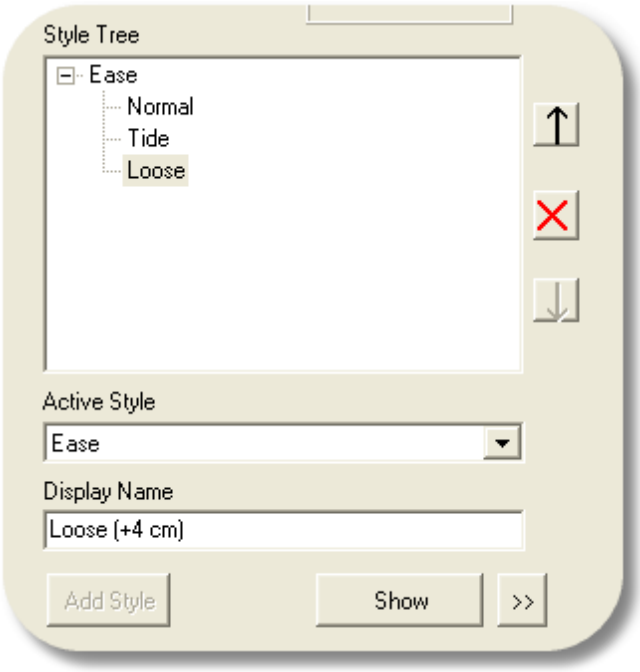
3.1.6.4 Display Name

Purpose

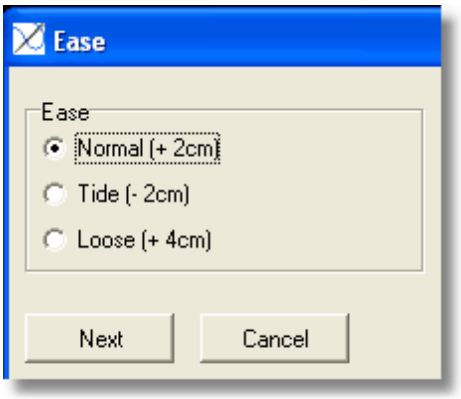
The display name is the name or title that the user sees when running the macro in PatternMaker. This can be different then the Style Name.
It allows you to use also other symbols or signs in the style option window.

In the Style Tree you have to use **unique** names for the options and you cannot use special characters such as "-" or "+" or "?". In the Display Name you can use many special characters.
You can give a display name of a maximum of 40 characters. When longer, it does not fit anymore in the window that appears in PatternMaker.

Note:
You can also put a question into the display name like: "What ease do you want? ". Or you can give more information for the user about the style option.



Display name in MacroGen



Is displayed in PM

3.1.6.5 Re-arrange pattern pieces and styles

In MacroGen 4 it is possible to rearrange the Styles in the Style Tree in a different order.
Select the Style you want to move up or down (one click) and click the arrow button up or down. The style will move up or down changing the order.

Important:
When the Style will not move up or down, it may be because some points are related to the styles above/below. For instance, when a measure made from points is made in a style, it can not be moved upwards above the style where those points are made.
PatternMaker does not allow you to do things that are not correct.

3.1.6.6 Show Style Windows

Most procedures in MacroGen require that at least one style window be open. Menu command options such as Objects and Zoom cannot be done if there are no windows open.

Highlight a style from the style tree, and then click the "Show" button. The selected style window opens.

You can also double-click on the style in the Style tree to open the style window.

3.1.6.7 Rename Style

Styles can be renamed just like pieces. Click on the style you want to rename with the left mouse button and then click it with the right mouse button. A small dialog box appears where you can type a new name.

If you rename the root style in a piece you will also rename the piece.

Procedure:

1. Right mouse-click an entry in the Style tree. A small "Name" dialog box opens.
2. Type a new name for the Piece, and click the "OK" button.

Changing the Piece name does not affect the Display name. Check afterwards if the displayed name is also the way you want it.

3.1.6.8 Delete Style

Purpose

To delete a Style, select the style you want to delete and click on the red X.
A warning appears asking if you really want to do it.

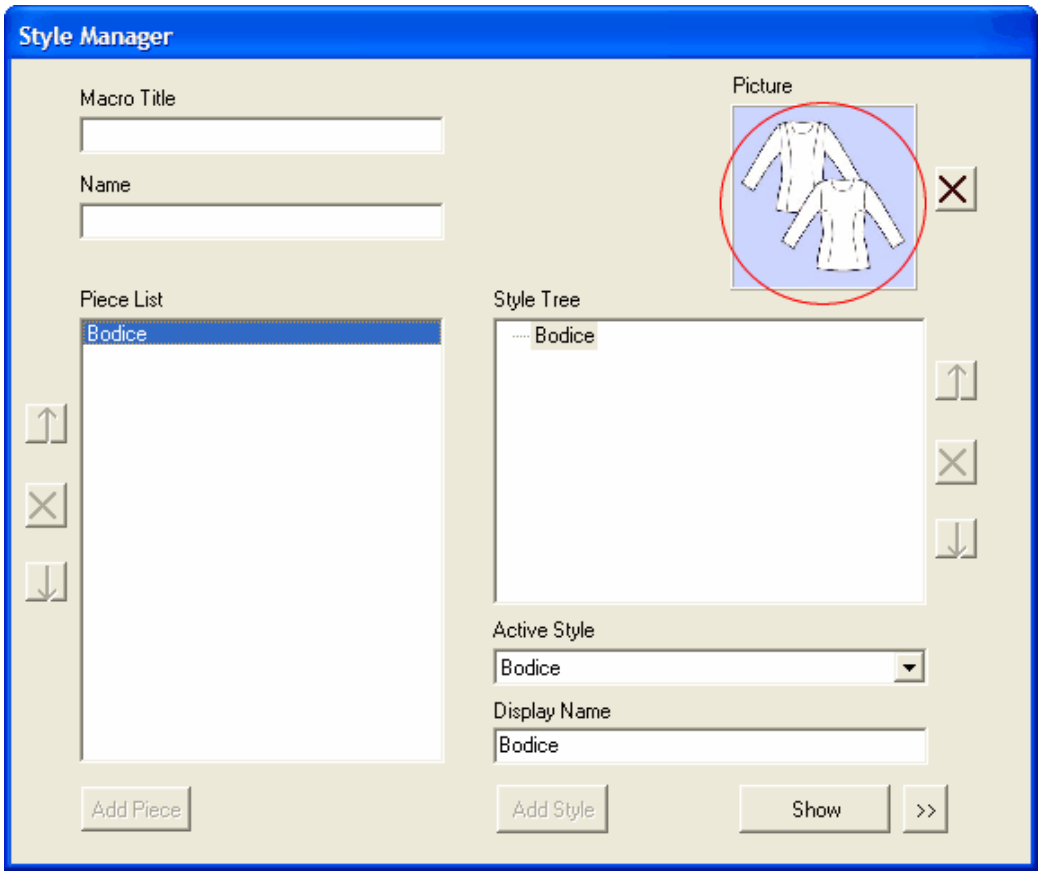
3.1.6.9 Style Picture

Purpose:

Use the Style Picture to add an illustration of the style.
This illustration appears in the dialog box that selects the style; when the macro user moves from one choice to another in the dialog box, the illustrations change.

The Style Picture command prompts you for a file (directory and filename) for the illustration. The only supported file format is JPEG (*.jpg). MacroGen can not create illustration files; you have to provide your own, using separate software.
The maximum size of this picture is 400x400 pixels

The image file has to be in the same directory as the macro file, when the user runs the macro. Remember to include image files, when distributing macros to your customers. The image has to be in the same directory; the macro language does not support directory paths.



Procedure:

1. Select the style you want to set the picture for.
2. Click on the Picture area, browse and select an image.

3.2 Style Dependent Drawer

Purpose

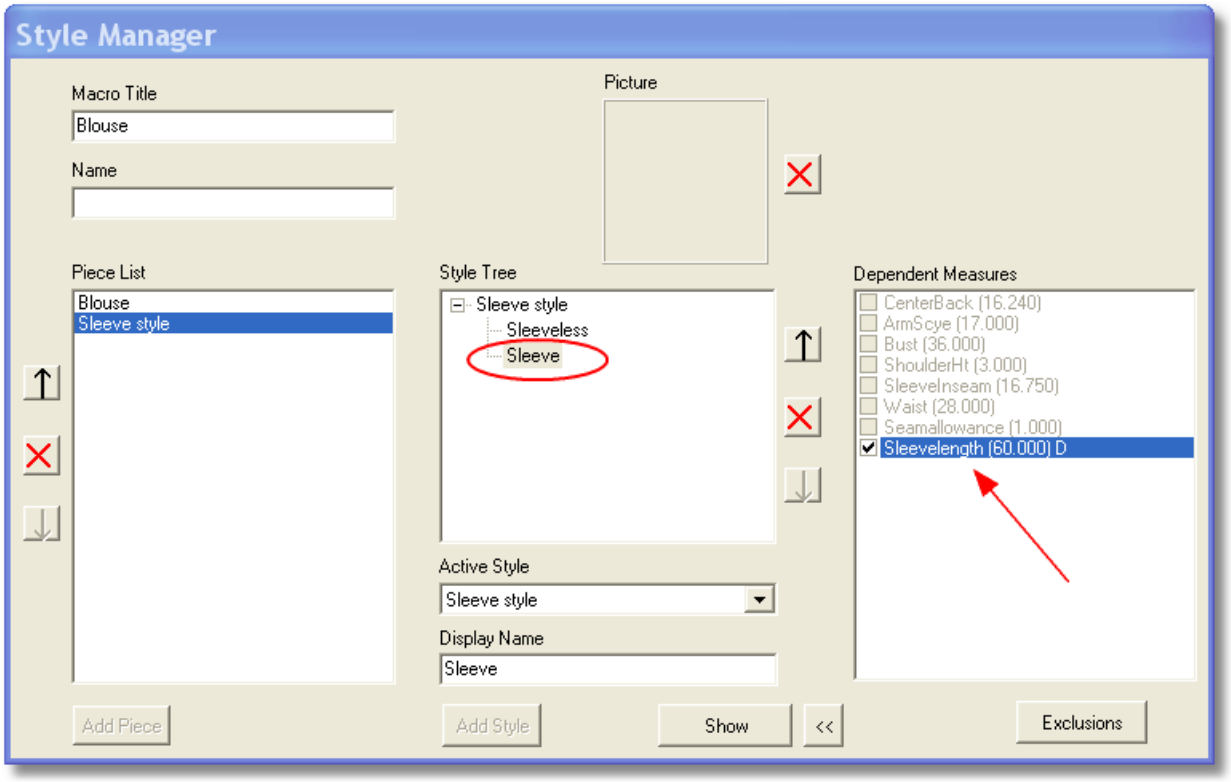
Use Style Dependent Drawer (= >> Button) to open the Dependent Measures form. In this form you can define which of the Style Dependent Measures have to be used with the current style.

A list of all the Style Dependent Measures 56, defined in the Measurement Table, appear in this Dependent Measures dialog box with checkboxes. Check all of the measurements that should be available with this style. If the user selects while running the macro this style the dependent measure will be asked to fill in.

Procedure:

1. Highlight the style to include a dependent measure.
2. Select the Dependent Measure drawer by clicking this button: (see picture on the right)
3. Check the dependent measures to be displayed for this style. See picture down.

Show Style Dependent Drawer



Important: Styles do not inherit style dependent measurements from their parents. These boxes are never checked automatically and you must set them for every style in the style tree.

A Style Dependent measure is always a prompted measure. Therefore you will find more information about the style dependent measure in the chapter Prompted Measure (see Style dependent measure 56).

Note: in one style a dependent measure is used. In the other style where the prothe prompted is not asked, because of a dependent measure the
default defined measure should be used.
This works then exactly as a regular prompted. The defined default value is
used until you change it into your own value.

3.3 Style Exclusions

Purpose

Use **Style Exclusions** to remove certain combinations of style options from a choice box at run time.
This command is an application of conditional logic; i.e. if the user selects a given style option (or combination of options, then certain styles don't appear in a subsequent dialog box.
For example, if a user selects a strapless style for a dress, then only the style Sleeveless should be valid and the other sleeve styles should be excluded.
Or if a user selects as Sleeve style a Short sleeve or Sleeveless the style Cuff after that should not appear.

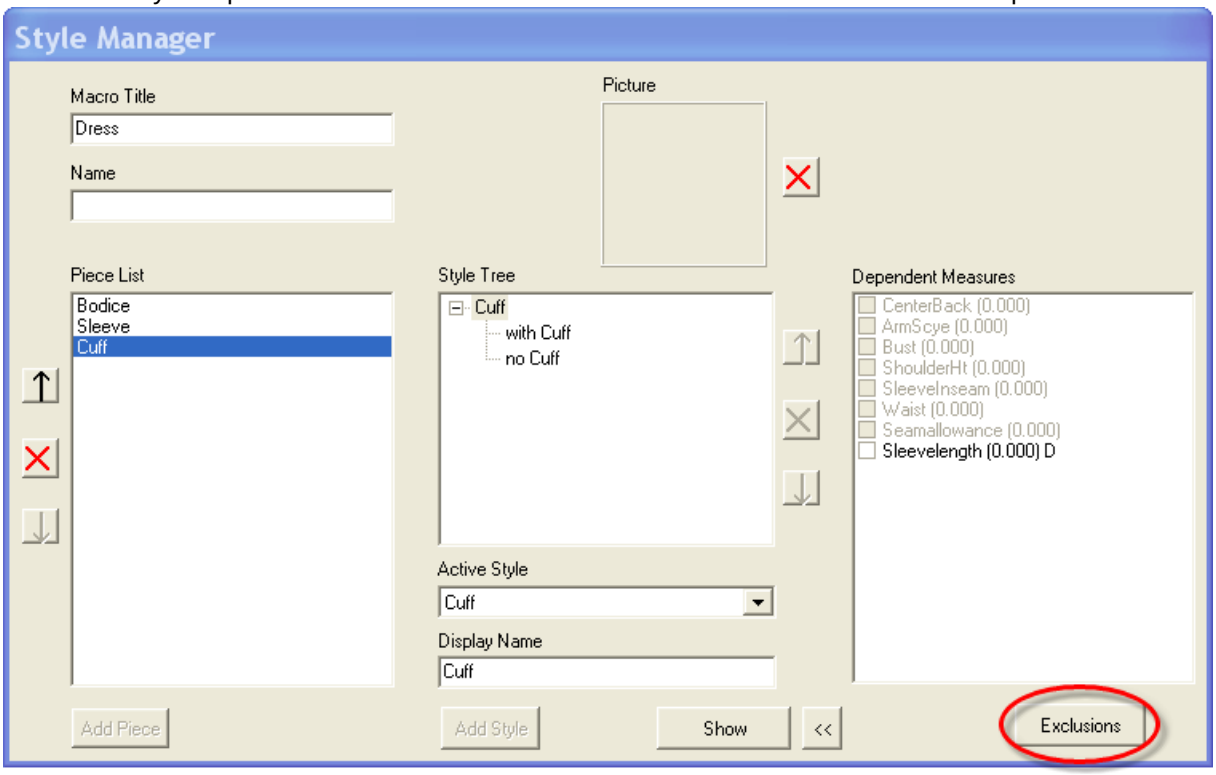
Important: It is not possible to exclude a whole style. One style option should always be valid!
When you actually want to exclude a whole style for instance Cuff, because in a strapless, sleeveless dress a cuff is not done, you have to add the style option "No Cuff" to the Cuff style. In this style you delete all objects. You can now exclude the cuff style option and include the no Cuff option.

If "ALL but one" of the choices for a particular style point are excluded (as in the sleeve type example above), then that dialog box does not appear at all. There is no choice to make for the user. The one valid style is executed.

Procedure:

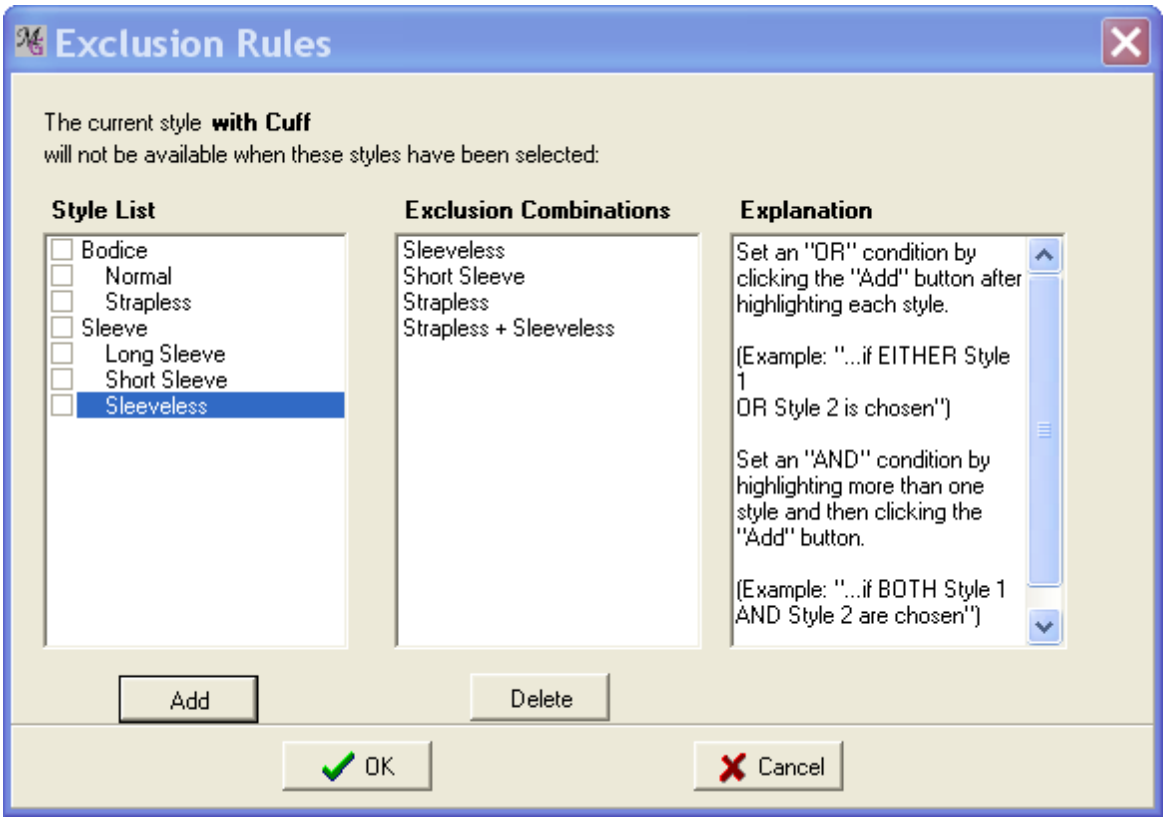
1. Select a piece/style in the Style tree. This is the style that will be affected by the style exclusions rule you are about to create. In the example below we have selected the style option "with Cuff".

2. Select the Style Dependent Drawer Button and then select the Exclusions Button. See picture down.



The **Exclusion Rules dialog** appears:

The Style List field contains a list of all the pieces that come **before the current style**, and their style choices.



Note on the order of events:
Recall that the Style tree lists objects in the same order that they are created in the actual macro. You can't base an exclusion rule on a piece or style that has yet to be created, when the choice box for the current style comes up.
Specifically, this means that if you select a style from the first object in the Style tree, the Style List field here will be empty. You can not add exclusion rules to the first object in a macro.

Style choices for an object cannot be used to exclude other styles for the same object, even if there are more than one choice box for the object. Style choices within an object are determined by simply adding or not adding branches to the Style tree.

3. Check one or more of the boxes in the Style List and click the "Add" button. The style(s) name(s) appear in the Exclusion Combinations field.

4. Repeat the above step to add more Exclusion Rules.

In the exclusion combinations window, the "+" symbol represents a logical **AND**.
When you select (check) 2 different styles at once and add them to the Exclusion Combinations list on the right the exclusion will only happen if the user selects style **A and B**.
Items on different lines are connected with a logical **OR**.

So, the exclusion rules in the illustration above can be read "IF ((Strapless AND Sleeveless are selected) OR Strapless or Sleeveless or Short Sleeve is selected) THEN exclude the current style option "**with Cuff**".
The No Cuff style option (with no drawn objects in that style) will be valid and executed.

The Exclusions Rule form can also be opened in the menu Settings / Exclusion Rules

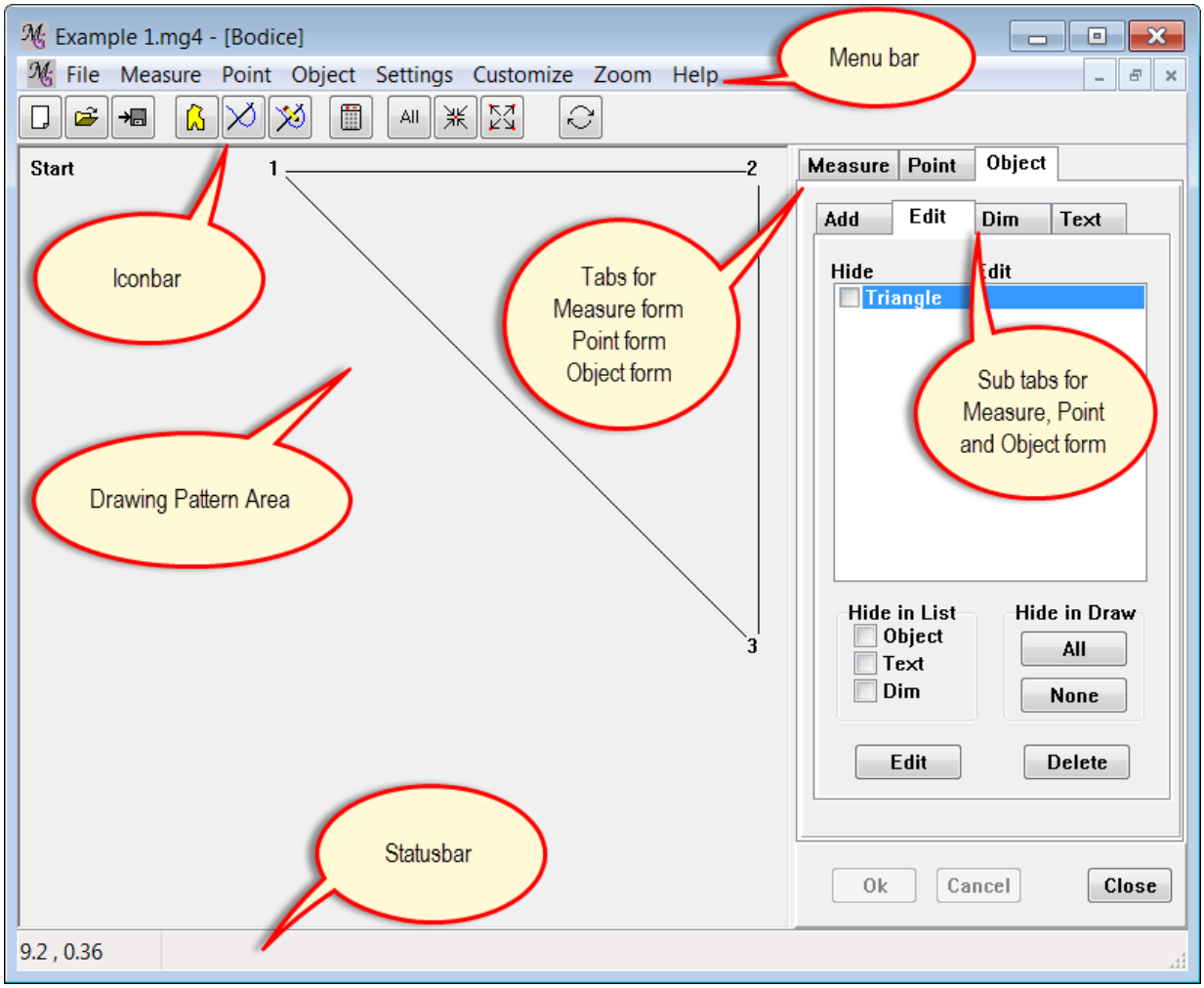
Part 4

4 Pattern Area

4.1 Overview

To see the **Pattern Area** (sometimes called "**Drawing Area**"), you have to open a Style (mother or child) in the style tree.
The Pattern Area contains tools for creating, viewing, and editing a MacroGen style. This is the heart of the MacroGen work process. It shows all Measures, Points, and Objects, and a pattern window that displays the current style. Important rules about the Pattern display include:

- **The Pattern Area** corresponds to one style in the Style Tree 32.
  It is not the whole macro. If you have any doubt which style you're working on, use window commands to display Style Tree and Pattern Area at the same time.
- **The points you see** do not all appear in PatternMaker when you run the macro.
  What is a Point? 158 describes how MacroGen points are related but not identical to PatternMaker points.
- **The sizes and locations** of points/objects that you see are based on the active Style
  (see Using the Style manager) 26 and the macro's default measurements. Depending on the measurements the user actually inputs, what you see is not exactly what you get!
- **The behavior of the drawing area** varies, depending on which tab (Measure/Point/Object) is selected.
  SeeWorking with Objects 117
- **See** What is a Piece? 159 and Working with Objects 117 for explanations of Pieces and Objects.



Major areas of the Pattern Window include:

- **Drawing/Pattern area**.
- **Tab Panel** with Measure/Point/Object tabs.
  Each of these is a complex dialog box with its own description below.
- **Sub tabs**.
  Each of the top tabs (Measure/Point/Object) has its own set of sub tabs, which are also described below.
- **Icon bar**.
  The zoom icons 

represent Zoom Functions 49 Zoom All, Zoom In, and Zoom out in the drawing area. You can also zoom in and out with your mouse's scroll wheel, if it has one.
- **Status bar** on the bottom with mouse coordinates.
- **Menu bar** for all the menus available in MacroGen 4.

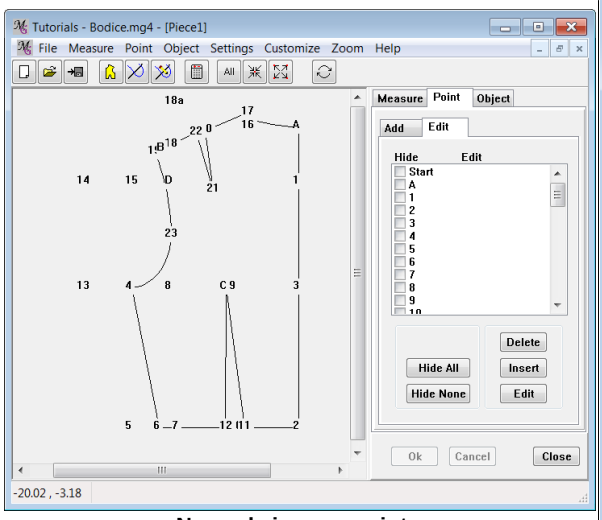
4.2 Pattern Area

The pattern area shows objects and points. It is a schematic view of your current work, rather than an actual drawing. You do not "draw" objects in MacroGen as you do in PatternMaker. Instead, you calculate them. The process goes in this order:

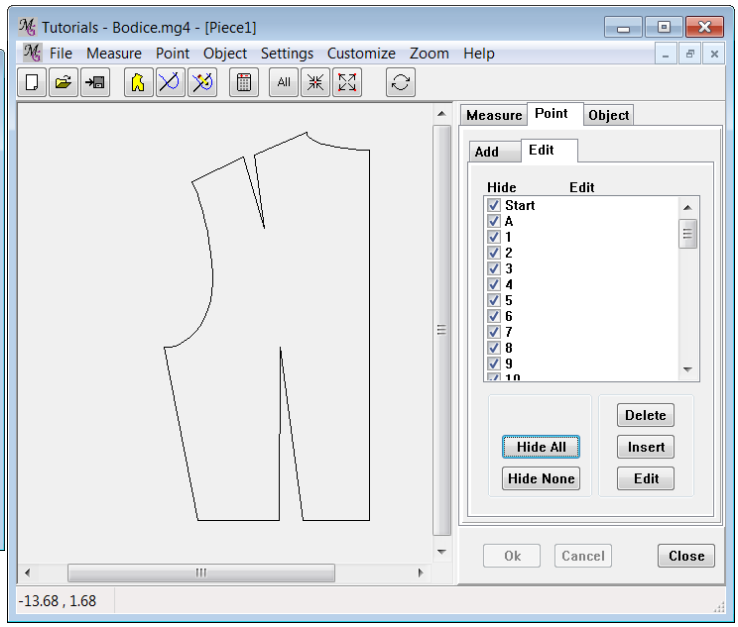
- Define measurements via inputs and calculations
- Calculate the locations of points based on the measurements
- Create objects by connecting points

For a description of how to use the various measure, point, and object views, see Object Tab 47, Working with Objects 117

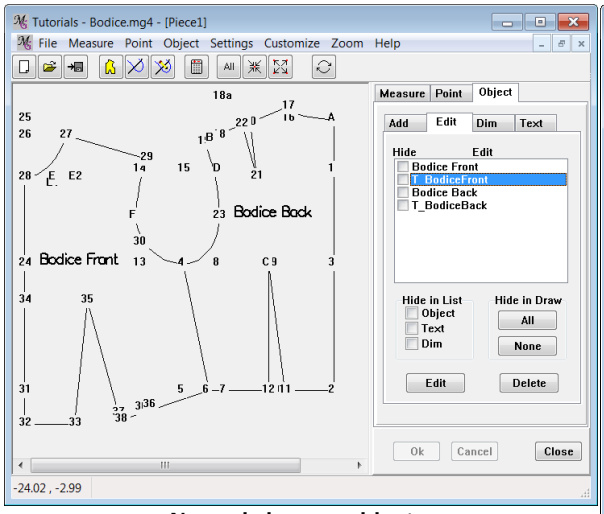
The pattern area shows the objects and points you have defined in your MacroGen project, with point locations according to the default values of the measurements and style you are viewing (also the active styles of other pieces). Points are displayed as names, not dots. Certain points or objects may be hidden from view. (see pictures below)



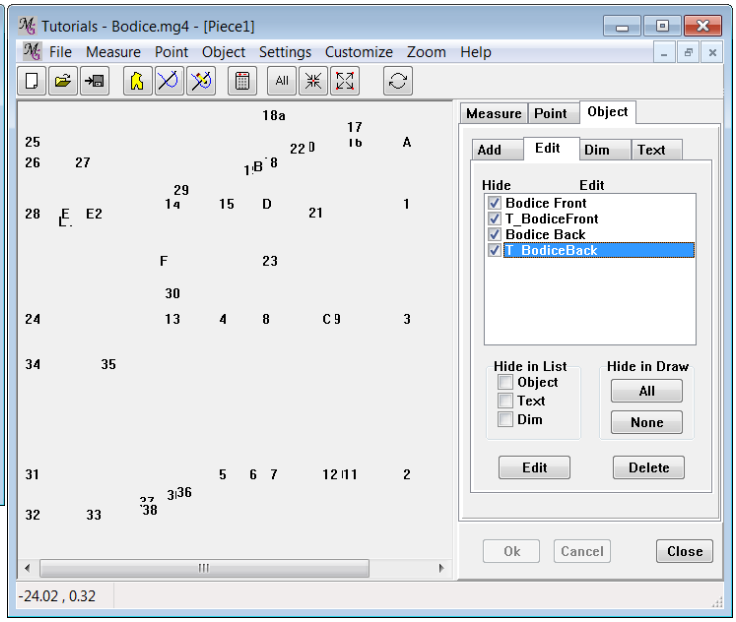
Normal view on points



Points Hide All



Normal view on objects



Objects Hide All

The Pattern area displays all (non-hidden) points that are defined in the entire project, but only objects belonging to the selected style are shown.

Clicking on points

The pattern area is a multi-function area, and several different things can happen if you mouse-click on a point.

- If you currently are in the point tab, the point's dialog box appears for editing.
  This is the dialog box you used to originally create the point, and you can use it to edit the point's definition.
  Point dialogs are described under Add Points 86.
- If you are currently drawing an object, the point is added to the object's point list (see Add Objects 120).
  A line appears to connect the point to the last one.
- If you are currently editing an object, the point is inserted into the object's point list (see Add Objects 120).
- If you right-click on a point that is already part of the object in progress, or if you're editing an object, you get a Connection dialog box (see Add Objects 120).
  This lets you make either a line or an arc at this point.

Zooming the pattern area

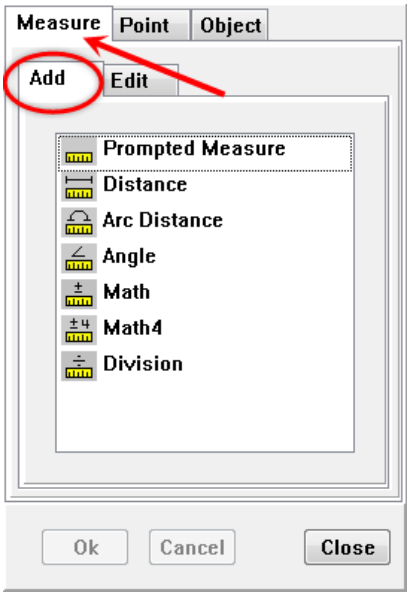
Zoom in and out to see all of the view or a close-up. See Zoom Functions 49

4.3 Measure Tab

The Measure tab in the Tab Panel shows you the measures that are defined in your MacroGen project. It contains two sub-views:
Add and Edit.

- **Add**

Procedure: Style Tree->Show Style->Measure tab ->Add (sub) tab->click an icon.

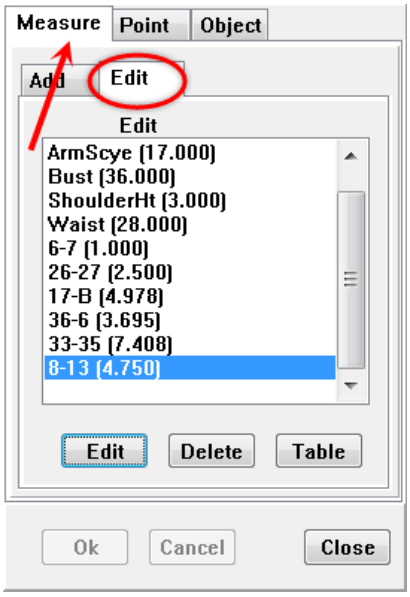


Tab Panel/Add Measure

A list of commands appears to create the various types of measurements. These are the same commands described in Working with Measurements 51.

- **Edit**

Procedure: Style Tree->Show Style->Measure tab ->Edit (sub) tab->highlight a measure name



Tab Panel Measure/Edit

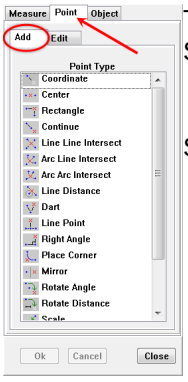
Edit : Click edit button to edit a measurement. See Edit measurement 68.
Delete : Click delete button to delete a measurement from your project. See Delete measure 71
Table : Click Table button to import/export a measurement table. See Measurement table 72

Note:
Doubleclick on a measurement in the edit list opens also the measurement so that you can edit.

4.4 Point Tab

The Point Tab lists the points that are defined in your MacroGen project, and contains two sub-views: **Add** and **Edit.**

- **Tab Add**



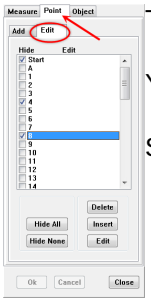
Tab Panel Point/Add

The Point/Add dialog lists the various point types.
Select a Point Type to add a new point.

See Add Points 86 for the various point types.

Procedure:
Style Tree->Show Style->Point tab ->Add (sub) tab->click an icon.

• Tab Edit



Tab Panel Point/Edit

This dialog lists all the points that you have defined in your MacroGen project.

You can hide, insert, edit, or delete points via this dialog.

Specific made points, Custom points 161 can be added via the Customize menu.

Procedure: Style Tree->Show Style->Point tab ->Edit (sub) tab->highlight a point

Hide : Check the box next to a point's name to hide it from view in the Pattern Area. It is often necessary to hide points when they are crowded close together, to keep some points from obscuring others. Hiding a point affects the View Area display and disables you from selecting it in View Area functions such as adding the point to an object, but it has no effect on the final macro. Hidden points are still shown in the various point lists that appear in MacroGen.

Hide All : Click the Hide All button when you want to hide all the points at once in the Pattern Area.

Hide None : Click the Hide None button when you want to show all the points in the Pattern Area.

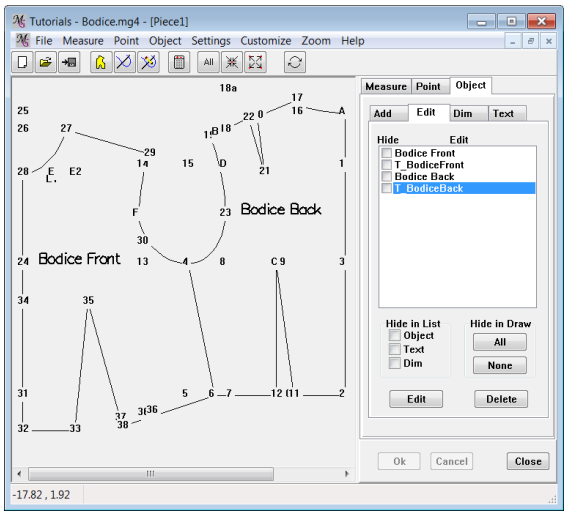
Edit : Click the Edit button or double-click a point's name to edit its definition. See Edit Points 110

Delete : Click the Delete button to delete the definition of the highlighted point. You are not allowed to delete a point that is referenced by another point, or an object.

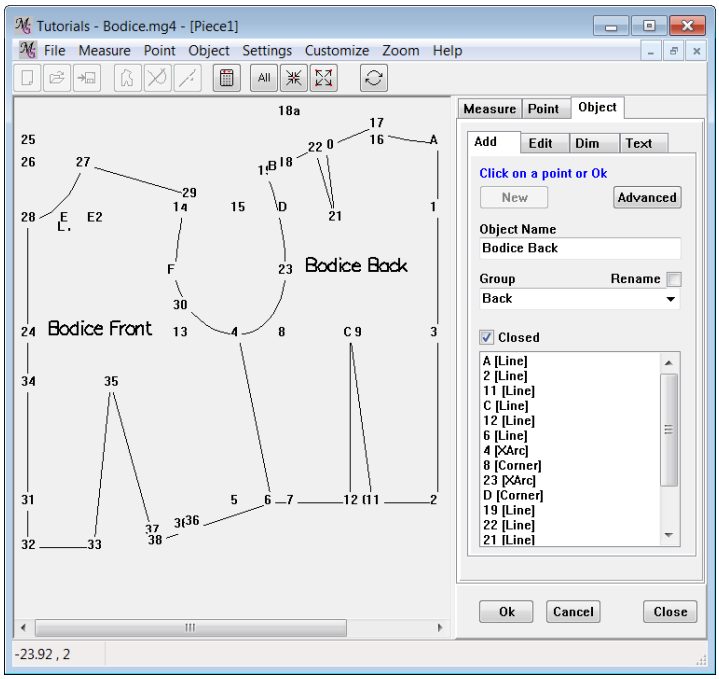
Insert : When you add a point normally it appears at the bottom of the list, with Insert you can insert a point after another highlighted point.

4.5 Object Tab

The Object List tab contains functions for creating objects and working with their point connections.



Object list



Object Open to see the connections

Objects

For a general discussion of MacroGen objects, see Working with Objects 117.

The Object tab displays details of objects, and has functions to create and edit objects.
With the **Add** sub tab you can add objects to your project.
The **Edit** sub tab lists all objects for the current style. Use **Edit** to display objects and to select an object for hide, editing or delete.
With the **Text** sub tab you can add text to your drawing.
With the **Dim** sub tab you can add a dimension line to your drawing.

Use also Edit to edit an already made text or dimension object.

Part 5

5 Zoom Functions

Zoom the Pattern Area in or out with MacroGen's four Zoom commands.

Access these commands via icons on the main toolbar or the Zoom menu. The zoom icons are:

- **Zoom All** (adjusts zoom to fit all objects on screen)
- **Zoom In**
- **Zoom Out**

or

- **Scrollwheel of mouse**
  Zoom in or out with the scroll wheel on your mouse.
  Zooming with the scroll wheel is easy to use. Here is how it works.
  It scrolls to your mouse pointer when the scrollbars at the bottom and right side of the drawing area are both visible. Move your mouse to the desired point each time you scroll.

1. First select Zoom All to get the entire picture
2. Move your mouse to the point you want to see closer (don't click)
3. Scroll short with your mouse
4. Move your mouse again to the same point and scroll again
5. Repeat until you see enough of the point or the area around that point.

Note:
Zooming is sometimes essential when the Pattern Area is too cluttered to find the item you're interested in. Remember you can also make the screen less cluttered by hiding points (see Point list) 45 and objects (see Edit objects) 122.

Part 6

6 Working with Measurements

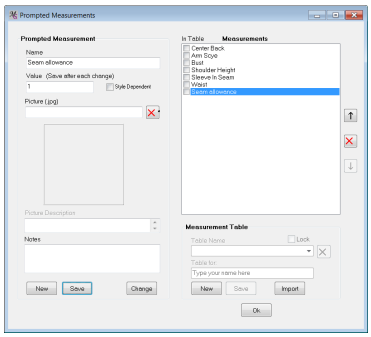
Measurements are the variables used to calculate the locations of the various points in a macro.
Defining the measurements is one of the most important steps in creating a macro project. Some of them are typed in by the macro user; others are calculated internally based on various formulas. As a MacroGen user, you first create a master list of available measurements by using the functions listed below. Then, when adding points and new measurements to the project, you use measurements from this list as inputs to your calculations.
Measurements also determine the working view of your project in MacroGen. Since the user has yet to input any measurements when you are working in MacroGen, how does the program know where to display the points? The working picture of a pattern in MacroGen is always based on the default values of all the prompted measurements.

There are two basic types of measurements:

- **Prompted measurements** 53
  (including Style dependent measures 56)
  Prompted measurements are the ones a user types into dialog boxes.
  MacroGen automatically constructs dialog boxes for these measurements.
- **Calculated measurements**
  These types of measurements are calculated by internal math and logic, and are never seen by the macro user.

Prompted Measurement

When you add a prompted measurement to a MacroGen project, MacroGen also creates the dialog box that asks the user for the measurement. Usually, but not always, these are body measurements taken with a measuring tape. This is the dialog for creating a prompted measurement:

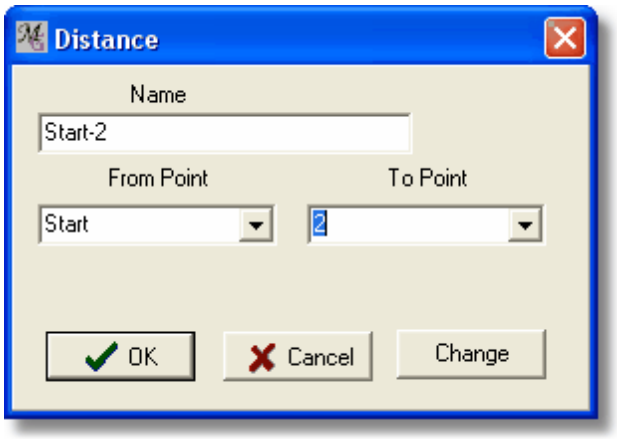


The measurement contains these elements:

- **Name** - the name or caption that the macro user sees in the dialog box
- **Value** - the default value that appears before the user types in a number
- **Style Dependent** - when checked this measurement is dependent on a choosen style
- **Picture** - the illustration that goes with the measurement in the dialog box (see also Master Measurement Table 79)
- **Picture Description** - text description for the measurement
- **Notes** - the notes about this prompted measure

Calculated measurements

Most of the measurement types are created and edited with very similar dialog boxes. Here is a typical dialog box, for the Distance measurement:



Internal measurements only have internal names, plus the parameters of the various formulas used to calculate them.

Every measure has a name. Most measures also require you to select some points or measures, in this case the "From Point" and "To Point". These fields are pull down lists that show the names of all the points that currently exist in the project. Note that if a measure depends on a point (or other measure), you can't create the measurement until the point or measure it depends on has been created! This feature means that **you must define points and measures in the same order that the calculations will take place.** You cannot, for instance, create the full point list and then create all the measures if the two are interdependent.

Procedure:
Use the *Tab Measure->Add* in the Pattern view (see Measure Tab) 44
Choose one of the measure types:

- Prompted Measure 53
- Distance measure 59
- Arc Distance Measure 60
- Angle measure 61
- Math 62
- Math4 65
- Division 66

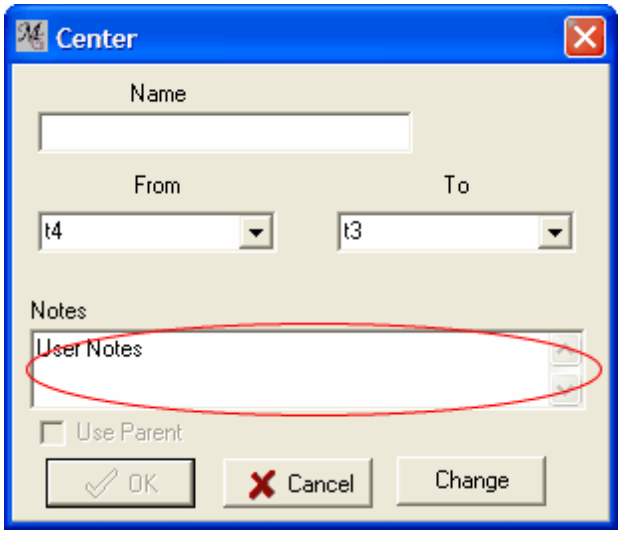
In every dialog box there are OK, Cancel and Change buttons. Ok is used to confirm your entry. With Cancel you leave the command without creating a measure. With Change you change the measure type. For example: from distance to curved distance.

Order of calculations

Most internal measurements, such as distances, are dependent on the values of points or other variables, and so they must be calculated only after the items they depend on. The order in which measures are calculated can thus be important, but normally MacroGen takes care of the logic of putting calculations in the correct order and the user doesn't have to worry about it. The order of calculations can be changed under certain circumstances, but this is an advanced topic not covered in this manual.

6.1 Notes

It is easy to forget what a point or measurement is for. All of them have a **notes field** where you can enter personal notes to remind you why you did what you did. The pictures for points and measures do not all contain this field.

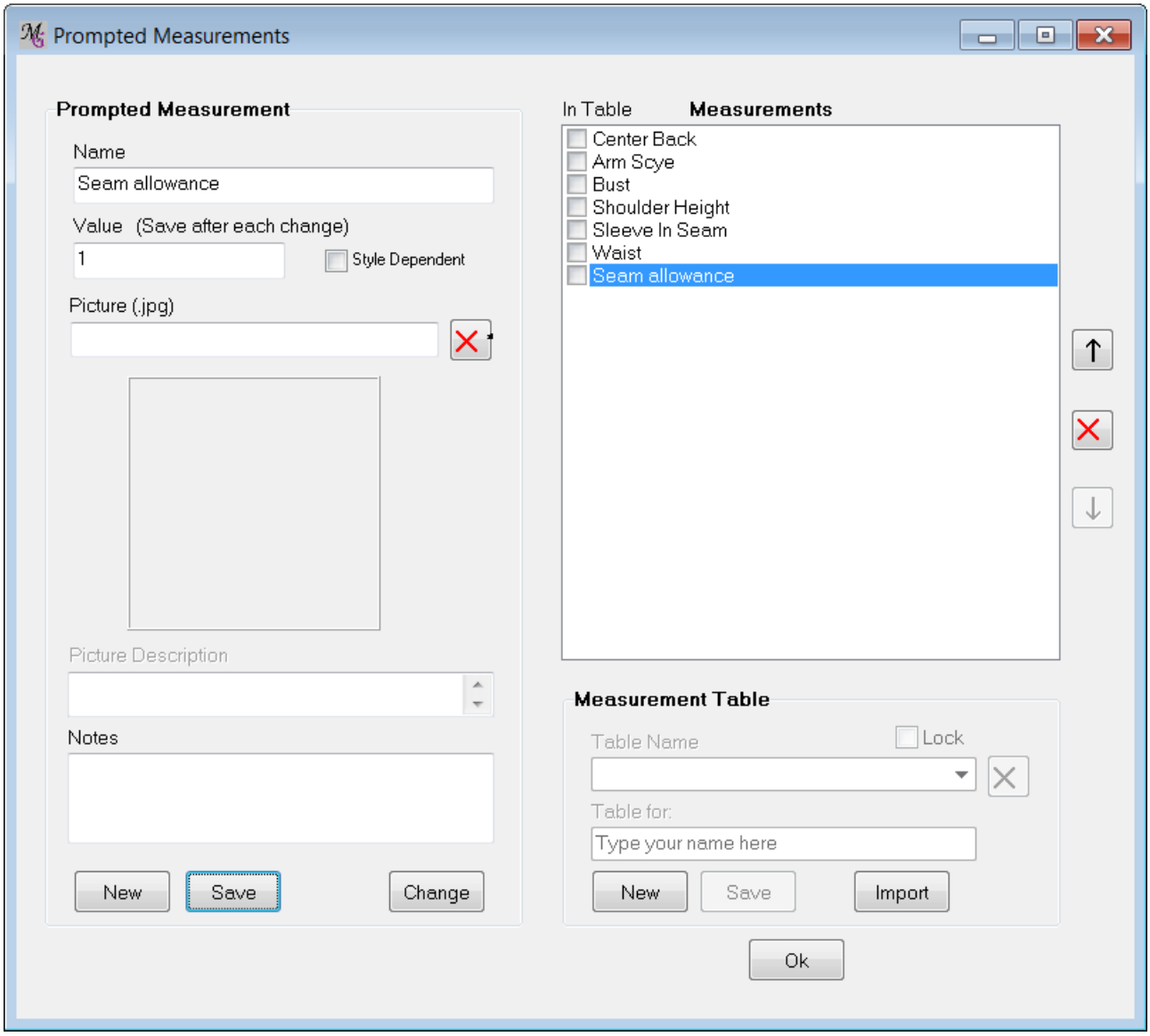


6.2 Prompted Measure

Prompted measurements are numbers that the macro user types into a dialog box. Usually, but not always, these are a person's body measurements. For example, a bodice pattern macro may ask for "Sleeve Length," "Bust," and "Waist" measurements, among others. The user can then enter his or her own measurements, to create a pattern that is designed specifically to fit them.

Prompted measures can be stored in a Measurement Table 72 so they can be entered once rather than each time the macro is run.
They also can be attached to a specific style. See Style dependent measure 56. An example would be if you create a shirt sleeve. It can be short or long sleeved. You'll want the sleeve length to be asked only for the long sleeve.
Each prompted measure has a picture attached to it and a picture description to show and explain to the user what this measure is and how to take it.

Because prompted measure are so closely related to Measurement Tables 72 they are entered in the same form.



Procedure:

Tab Panel ->Measure-> Add -> Prompted Measure

1. Click, or select Measure->Add->Prompted from the Measurement Tab.
   You will see a window entitled "Prompted Measurements."
2. Click **New** to create a new measurement.
3. In the "**Name**" field, enter a name for the variable that the macro will request when it is run: Example: Seamallowance
4. In the "**Value**" field, enter the default value for the measurement.
   The default value has two functions: it is the value that appears in the macro if the user doesn't type anything in, and it is the value used to calculate the objects you see in MacroGen's Pattern displays. The latter means that you should use reasonable values for all defaults. If you leave in unreasonable default values (such as zero), the piece displays may become unreadable.
5. **Style Dependent** - when you check this box the measurement will only appear in certain styles. See Style Dependent Measure 56
6. **Picture** - Select a picture for this measurement. A copy of the picture will be stored with the project.
7. **Picture Description** - The text describing this measure and how to take it.
8. The "New" button again will save the currently edited measure and create a new one. At the right side of the

form the new made measurement ill appear.
Click this button and then repeat steps 3 and 6 for as many measures as you wish to create.

9. **Notes** - In this field you can add personal notes about this measurement.
10. The "**Save**" button will save any changes to a measure without creating a new measure.
    Even if you want to test with a measure and try new values you have to click Save to get the new value saved.
11. The "**Change**" button allows you to change this measure to another type of measure.
    Most commonly the prompted measures are changed to math measures that are calculated rather than being asked for.
12. In the right field **Measurements** all prompted measurements will appear. You can create a measurement Table with the prompted measurements, this will be explained further in Measurement tables 72
13. The "**Move Up**" and "**Move Down**" arrows rearrange the list by moving the highlighted measure up or down in the list.
    The order you see the measures in the list is the same order the user will see them in the dialog box(es).
14. In the **Measurement Table** field on the right side is used for making a measurement table. With the New, Save and Import buttons you can create, change or import a Measurement Table. See for this Measurement tables 72
15. The "**OK**" button closes this dialog box and saves your changes.

See also:

Overview of Measurements 41

Working with measurements 51

Editing Measurements 68

Deleting Measurements 71

Measurement table 72

6.2.1 Add Picture to Measurement

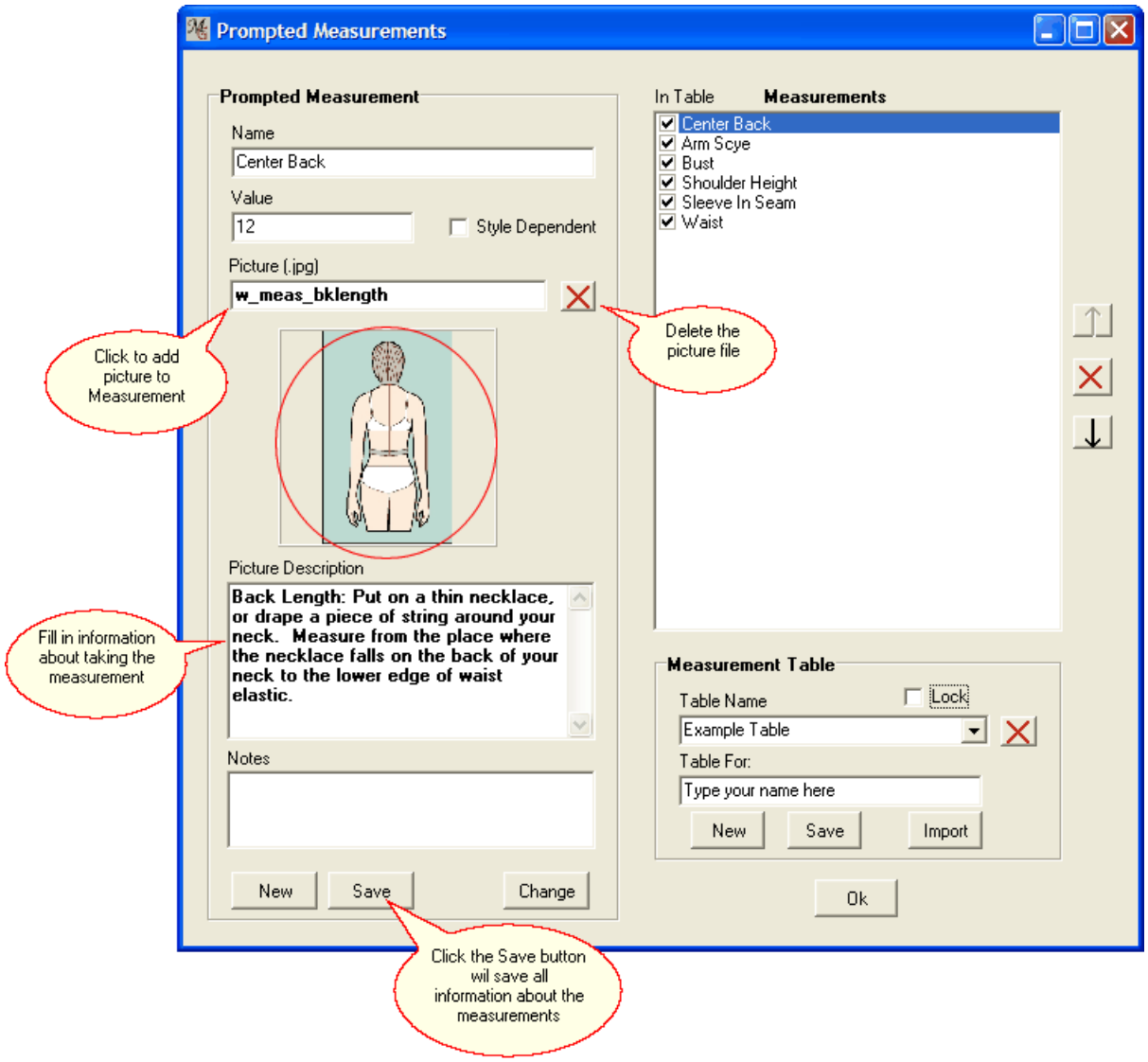
Click the **Picture** field to add an image to the measurement.
When you click in the white field, a dialog box pops up for you to select an image file. This picture appears in the dialog box when the user runs a macro or when he creates a personal measurement table .

 If you want to **delete** the picture file click the Delete button (red cross)

The **Picture Description** field is below the picture for further clarification of the measurement. Give some details about how to take them.The user will see this information when filling in the measurement table or while using the macro.

In the **Notes** field you can enter personal notes to remember. They are for internal purpose. The user of the macro does not see them.

When you click the **Save** Button down on the left all information about the measurement will be saved
The text file will be saved with the same name as the name of the picture. Only the extension is different. The picture might have the name "NAME.jpg" and the text will be saved with the same name such as "NAME.txt".

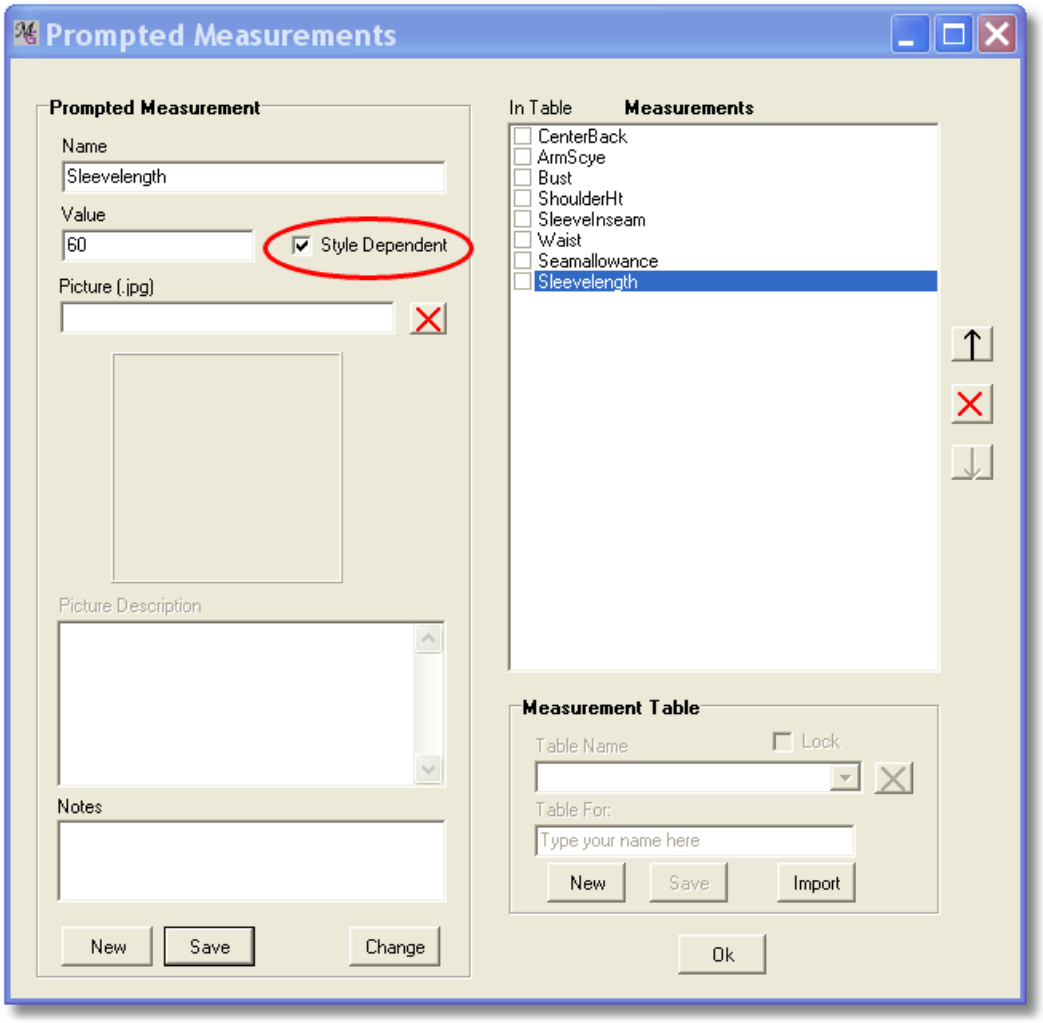


6.2.2 Style dependent measure

A **Style dependent** measure is a prompted measure that only appears in some styles. If it is not needed, the measure does not appear in the measure dialog box. For example, a blouse may come in style variations with sleeve length as a style dependent measure. If the macro user selects a sleeveless style, the "sleeve length" field never appears in the dialog box.
You make a prompted measure a Style Dependent measure by checking the Style Dependent box in the Prompted Measurements form.
See picture below.

A Style dependent measure that is not used is never seen by the user, but it is still defined and has a default value. It is legal to use it in a macro, although this is generally not useful.

When making a Master Measurement Table you can add a picture and descriptive text. (See Master Measurement table 79.)



Checking the Style Dependent box will turn a Prompted Measure into a Style Dependent Measure, so it available in the Style Dependent drawer.

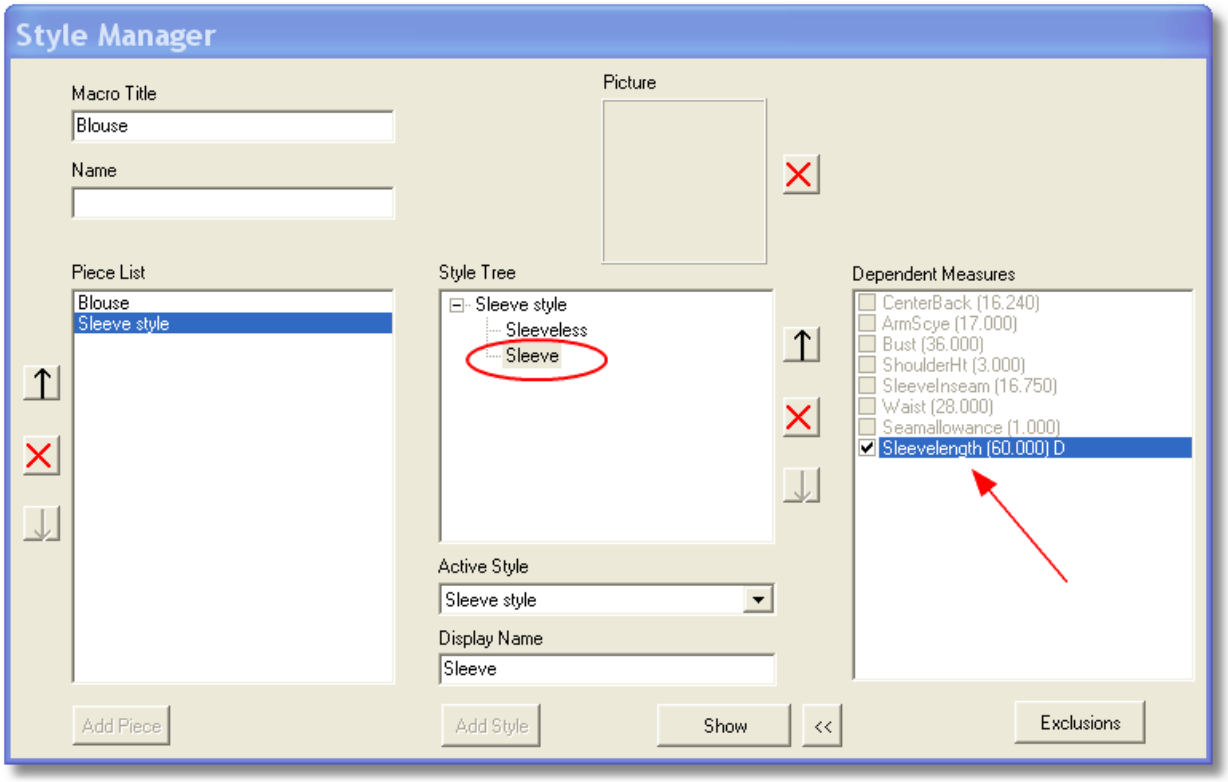
Procedure:

1. Measure -> Measurement Table
2. Click New.
3. Name: Measurement Name
4. Default Value: Measurement Value
5. Check: Style Dependent check box.
6. Click OK.

7. Go back to the Style Tree and select the desired style option
8. Click the Dependent Measure Draw Button (see at the right)
   The Dependent Measures list will appear to the Style tree.
   In this list all prompted measurements are visible, but only the measurements with the Style Dependent box checked can be checked here.(**D behind the measure**)
9. Check the measure to be style dependent for that

Show Style Dependent Drawer Button

selected style
If there are more styles which need a dependent measure select first the desired style, open the dependent measure list and check the dependent measure.



In the Style Tree the style **Sleeve** is selected in the "Sleeve style" .
With the Dependent Drawer button the Dependent Measures list is opened.
The Sleevelength is checked. This means that when the user selects the style Sleeve he will be shown the dependent measure **Sleevelength.**
He can fill in the desired length of the sleeve.

Important: Styles do not inherit style dependent measurements from their parents. These boxes are never checked automatically and you must set them for every style in the style tree.

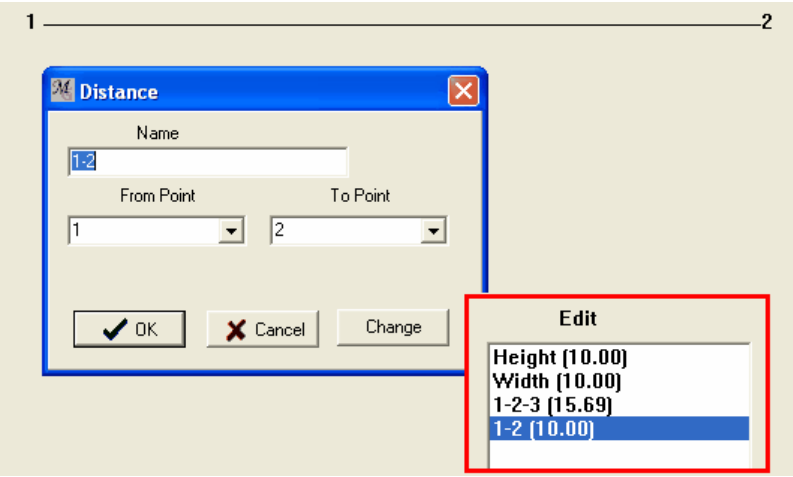
Note: We advice you to check the dependent measure box in the Prompted Measure form only when you are ready to test this feature.

Note: Dependent measure was named Conditional measurements in version 4 of MacroGen

6.3 Distance measure

A distance measurement is the distance between two points that have already been placed.

Enter the names of the two points and the name of the measurement.
The best name for this measurement is usually the name of the two points that are measured.



Distance Measure + result

Note: This picture doesn't include the Notes 53 field.

Procedure:

Tab Panel ->Measure -> Add -> Distance

1. **Name** : Type a name for the distance measure in the name field
2. **From Point** : Type or choose a point name from the pull down box
3. **To Point** : Type or choose a point name from the pull down box
4. Click **OK**
5. The measure will be added to the list in Measure -> Edit

For Cancel and Change see: working with measurements 51

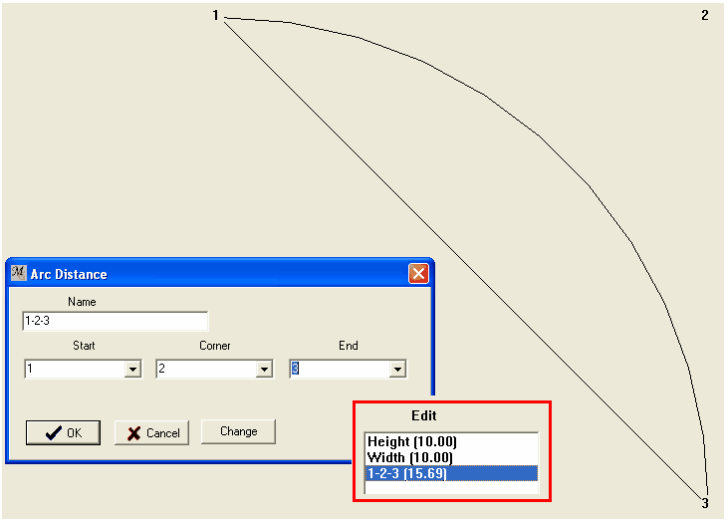
See also:

- Prompted Measure 53
- Arc Distance Measure 60
- Angle measure 61
- Math 62
- Math4 65
- Division 66

6.4 Arc Distance measure

Arc Distance measure is the length of an arc or curved segment. Recall from your PatternMaker User's Manual that an arc is defined by a start point, an end point, and a corner point. Unlike in PatternMaker, there does not have to be an arc (or even an object) actually drawn with the given points in order to calculate the length of the arc that they define.

Enter the names of the start point, the end point and the corner point, and the name of the measurement.



Arc Distance Measure + Result

Note: This picture doesn't include the Notes 53 field.

Procedure:

Tab Panel->Measure -> Add -> Arc Distance

1. **Name** : Type the name for the measurement
2. **Start** : Type or choose a point from the pull down a
3. **Corner** : Type or choose a point from the pull down a corner point
4. **End** : Type or choose a point from the pull down an endpoint
5. Click **OK**
6. The measure will be added to the list in the Tab Measure-> Edit

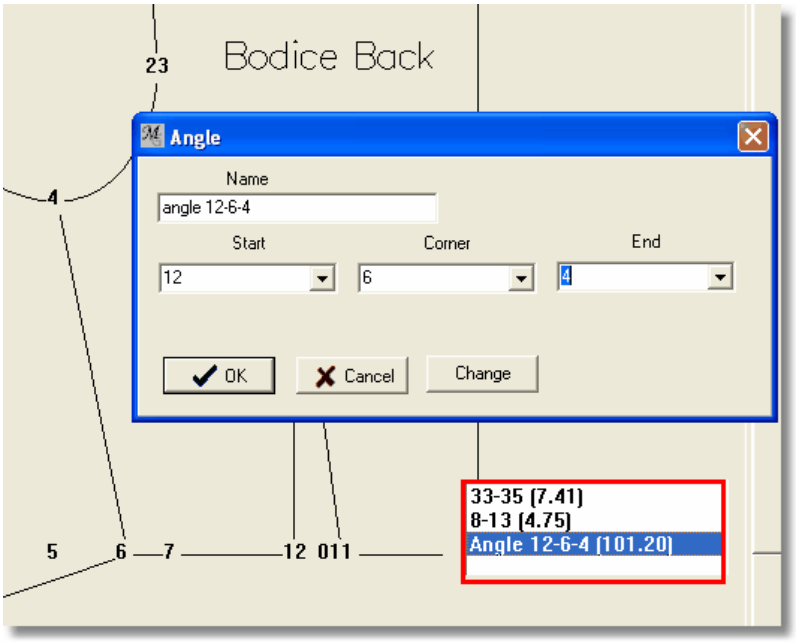
See also:

- Prompted Measure 53
- Distance measure 59
- Angle measure 61
- Math 62
- Math4 65
- Division 66

6.5 Angle measure

Angle measure is the angle defined by three points, measured in degrees.

Enter the names of the three points, where the "corner" is the corner or apex point of the angle, and the name of the measure.



Note: This picture doesn't include the Notes 53 field.

Procedure:

Tab Panel-> Measure -> Add -> Angle measure

1. **Name** : Type the name of the measurement
2. **Start** : Type or choose from the pull down the Start point of the angle (12)
3. **Corner** : Type or choose from the pull down the Corner point of the angle (6)
4. **End** : Type or choose from the pull down the Endpoint of the angle (4)
5. Click **OK**
6. The name will be added to the Tab Measure--> Edit

Note:
When changing the start and end point you get a different angle so be aware of the order of the points!

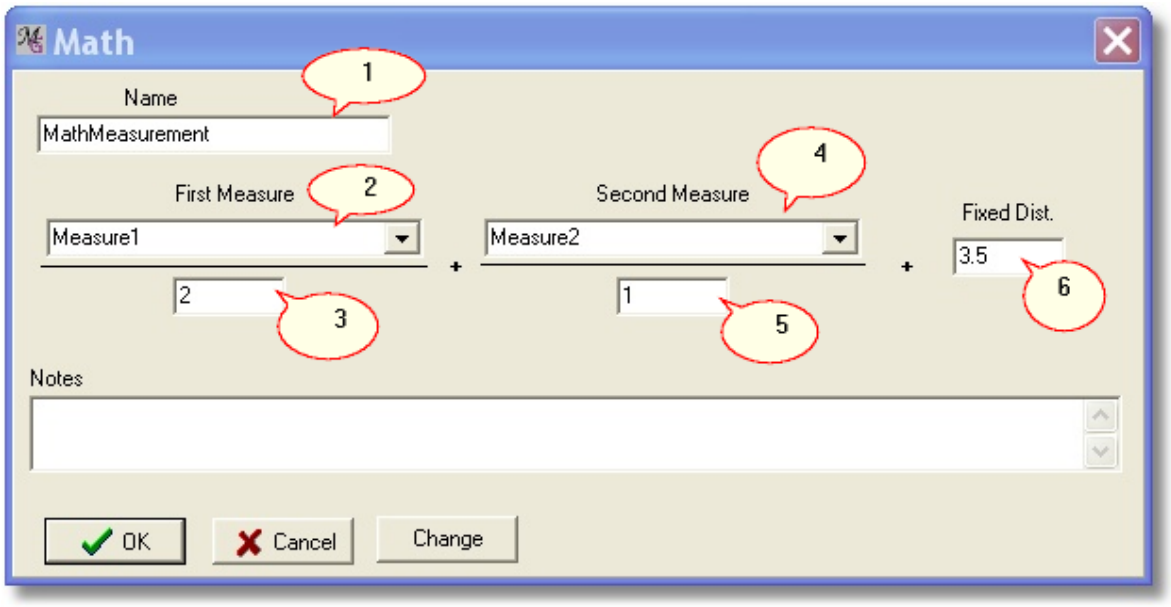
See also:

- Prompted Measure 53
- Distance measure 59
- Arc Distance Measure 60
- Math 62
- Math4 65

- Division 66

6.6 Math

A math measurement is actually a simple equation: a linear combination of two other measurements.
In other words an equation of the form Measure1/Constant1 + Measure2/Constant2 + Constant3, C3 is also called "Fixed Distance".



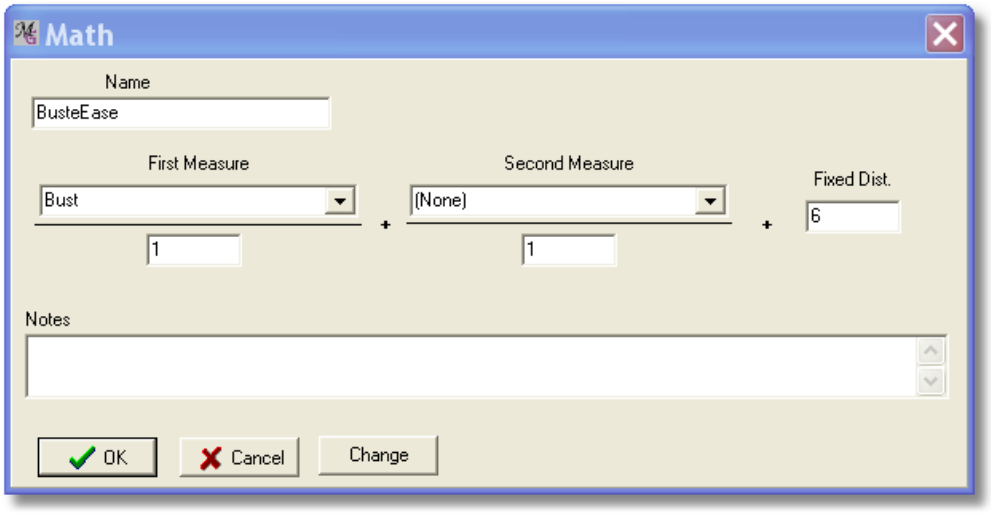
It is permissible to select (none) for either or both measurements and also 0 for the last Constant (or Fixed Distance), in which case those terms of the equation are set to 0.

Procedure:

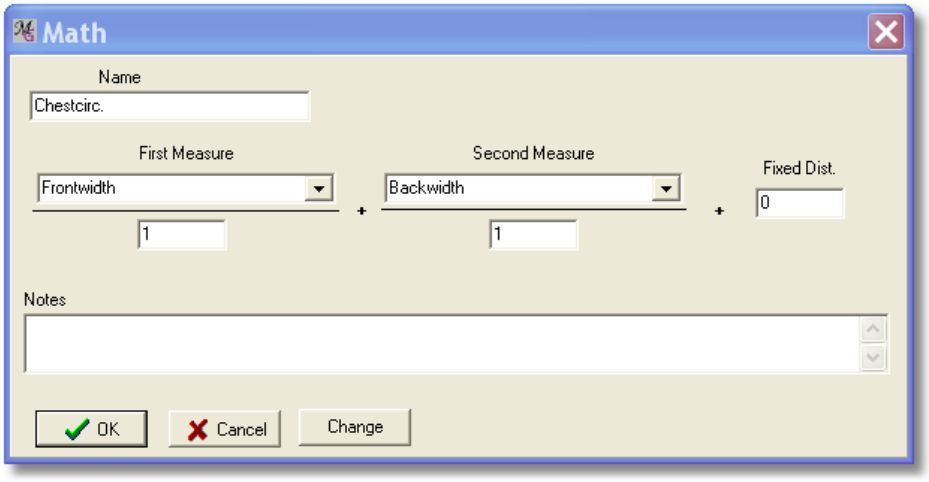
Tab Panel -> Measure -> Add -> Math measure

1. Type a **name** for the new measurement (see examples below) (box 1)
2. Select an existing measurement from the pull-down box for the **First Measure** (box 2)
3. If you want to divide the measurement in the box "First Measure" (for example, "Waist Circumference divided by 2"), enter a number(**divisor**) in box 3.
4. If you want to add two measurements together, select another measurement in box "**Second Measure** " (box 4)
5. Enter another **divisor** here, if you wish. (box 5)
6. If you wish, enter a number (**fixed distance**) which will be added to the one or two measurements you've selected (see Example 1, below).(box 6)
7. Click the "OK" button to return to your drawing. If you need to edit this measurement at some point, you can access it through the list.

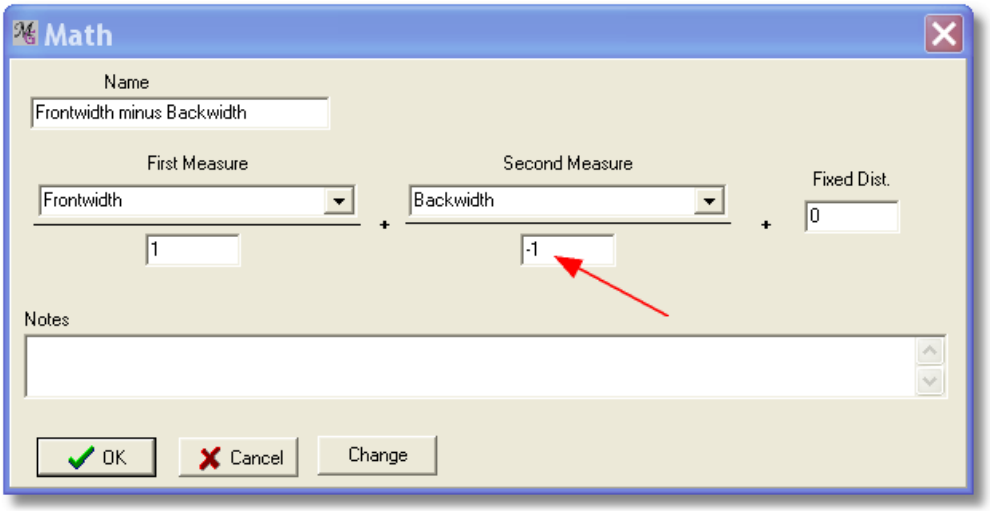
Example 1:
Bust Ease = Bust + 6
= Bust Circumference + 6 cm



Example 2:
Chest Circumference = Front Width + Back width



Example 3:
Frontwidth **minus** Backwidth
In this example we **subtract** the **Second Measure** from the **First Measure** by placing a **minus**!

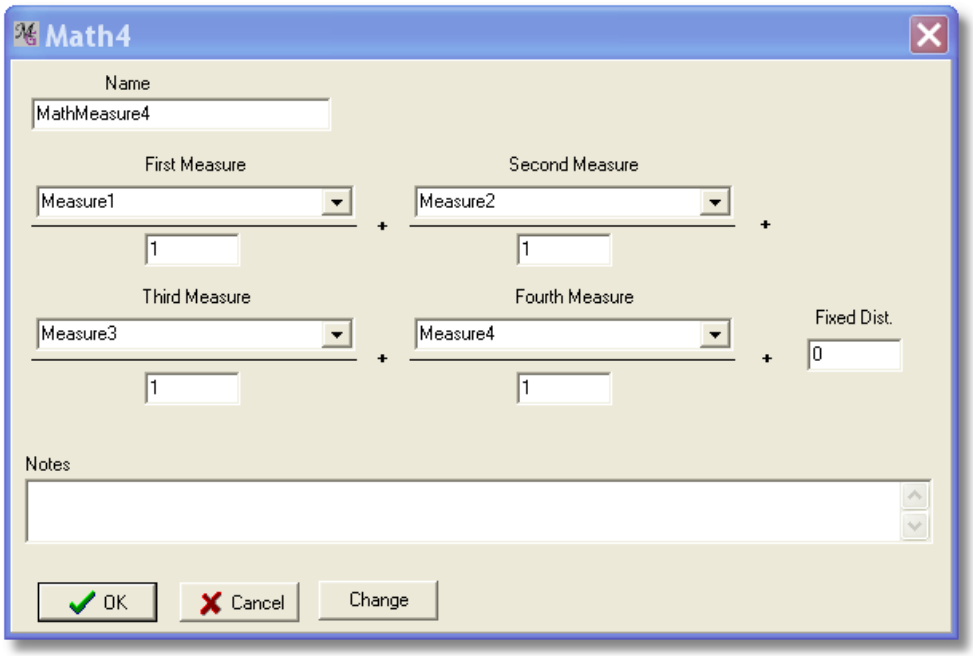


See also:

- Prompted Measure 53
- Distance measure 59
- Arc Distance Measure 60
- Angle measure 61
- Math4 65
- Division 66

6.7 Math4

A **Math4** measurement is similar to a Math 62 measurement, except it is a linear combination of up to four measurements:
Measure1/C1 + Measure2/C2 + Measure3/C3 + Measure4/C4 + C5
where C1, C2, C3, C4 and C5 are constants (also called "Fixed Distance").



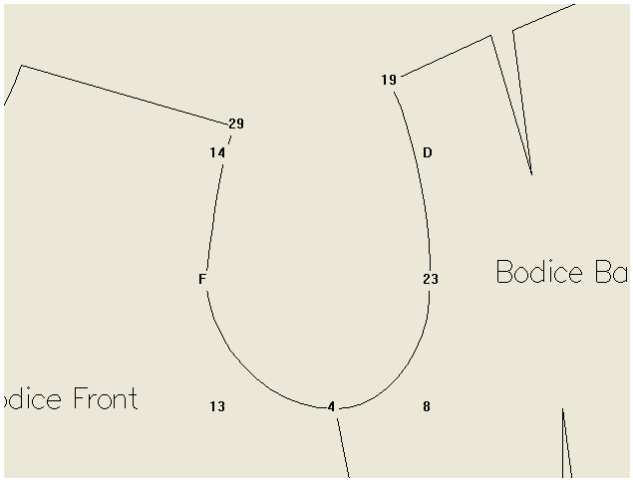
Procedure:

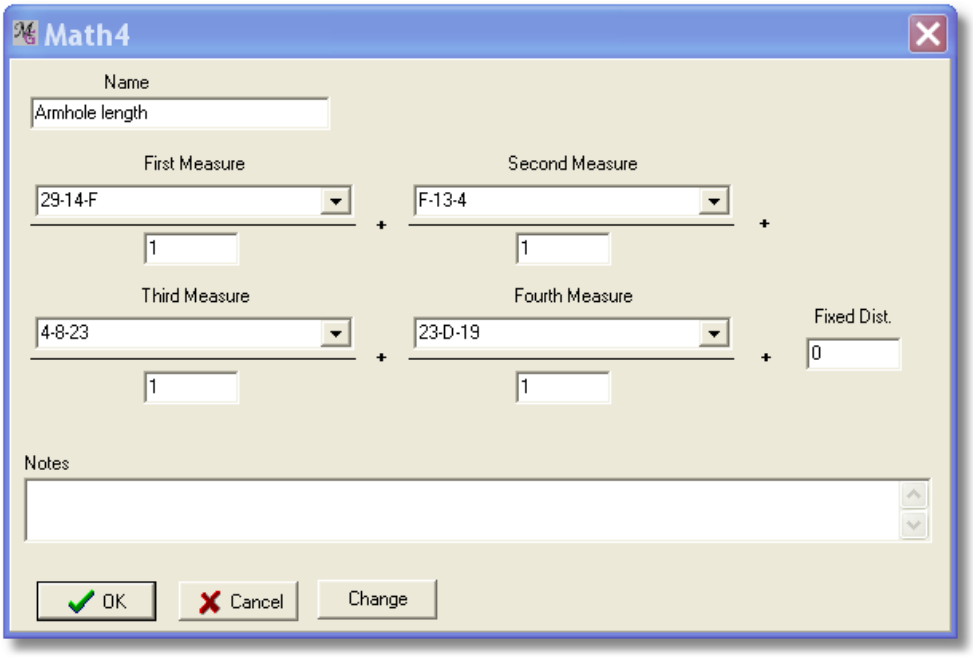
Tab Panel -> Measure -> Add -> Math4

Example:

This Math4 example is to measure the length of the armhole.
First make four Arc-Distance measurements

With the Math4 you can count up all 4 measurements in one click.





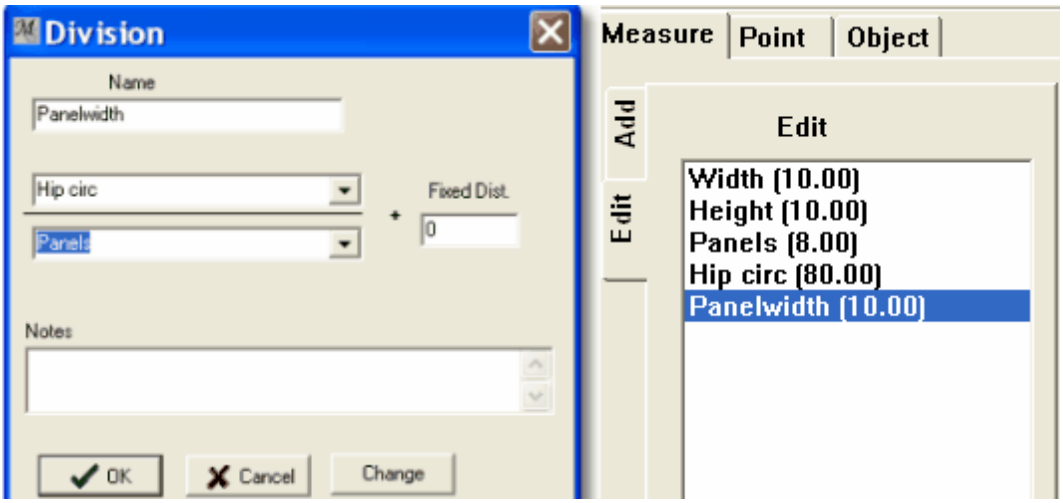
See also:

- Prompted Measure 53
- Distance measure 59
- Arc Distance Measure 60
- Angle measure 61
- Math 62
- Division 66

6.8 Division

A **division** measure is one measure divided by another.

In this example we can calculate the panel width of a panel skirt.



Procedure:

Tab Panel ->Measure--> Add -> Division measure

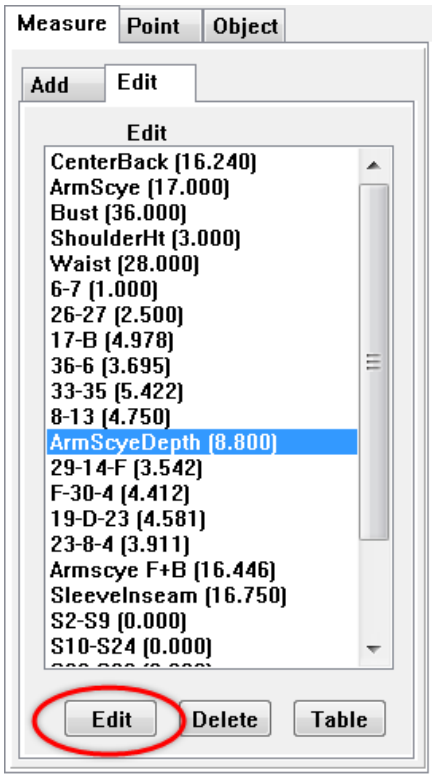
1. Name: Type in the name of the new measurement.
2. Select a measurement in the pull down box above the divider.
3. Select a measurement in the pull down box below the divider.
4. Note that a constant or "Fixed Distance" can also be added.

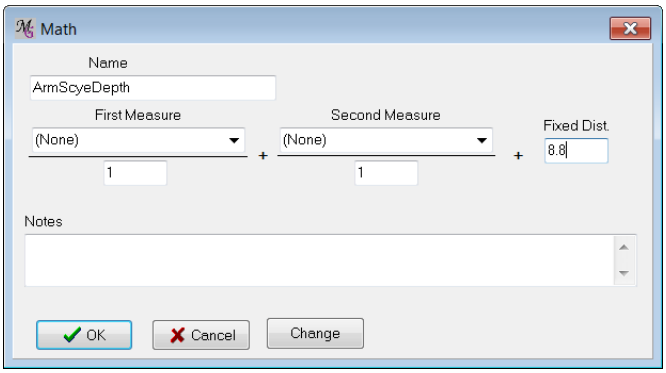
See also:

- Prompted Measure 53
- Distance measure 59
- Arc Distance Measure 60
- Angle measure 61
- Math 62
- Math4 65
- Division 66

6.9 Edit measure

Clicking the **Edit sub tab** in **Measure** makes the list of all made measurements appear**.**
By **double-clicking on a measure** in the list or by selecting the measure and clicking the **Edit button** the dialog box of the measurement you created before re-opens and allows you to change any of the fields, including the name of the measurement and all its inputs.
Edit Measure works with all types of measurements.
To change the type of a measurement, for instance from a Math measurement to an Angle measurement, see Change measurement type 69.



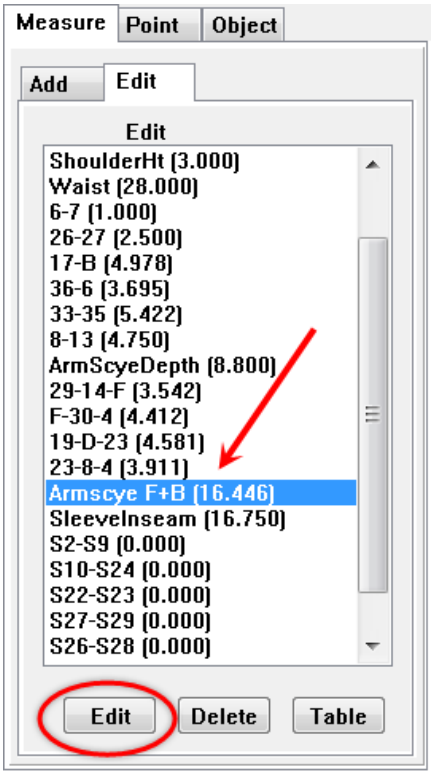


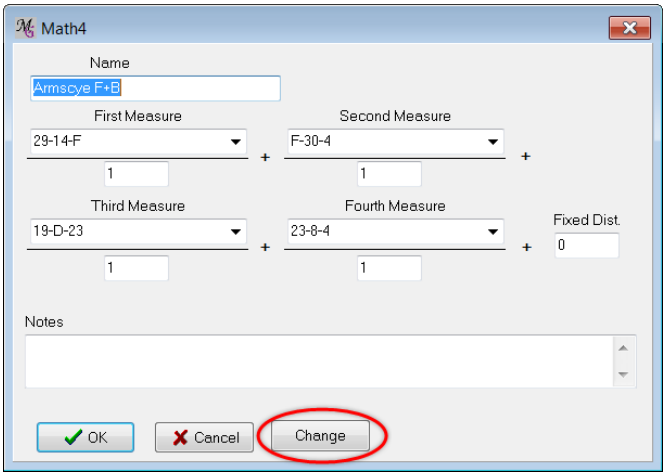
6.10 Change measure

Change Measurement lets you change the **type of a measure** that is already defined.
The key difference between changing a measurement and creating a completely new one is that if the measurement is referenced by other measurements or points, the references are preserved.

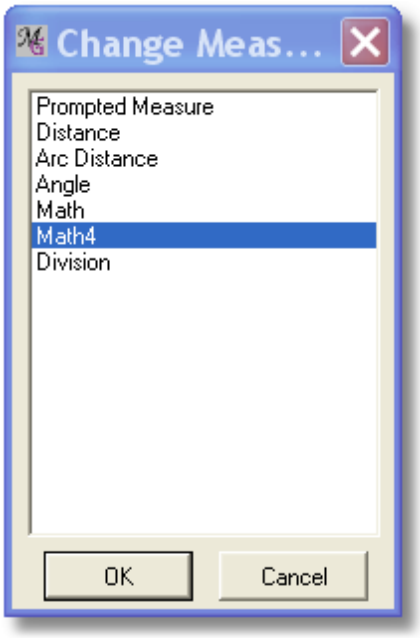
Procedure:

Tab Panel -> Measure ->Edit -> Select a measure ->Edit
or open a measure's dialog box from the Edit tab (see Measure list) 44 and click the **Change** button.
Select a measure and click the Edit button or Open (doubleclick) the measure that you want to Change.
Select the **Change button**.





A second dialog appears, for you to select the new type for the measure:



Select the type and a dialog for that measure type appears. Fill it in.

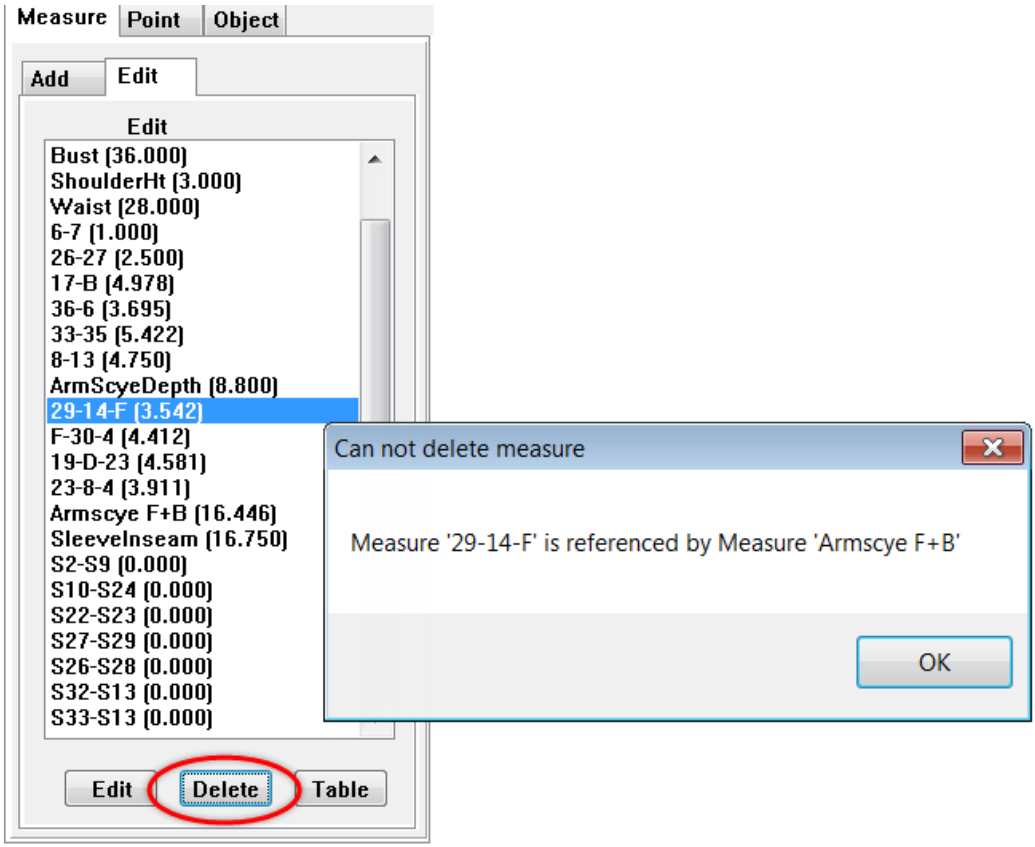
Note:
It is possible to put your program logic out of order by changing a measure to depend on a point that is defined after the measure.
Since MacroGen does not have a tool to back-check whether a measure is set before or after a point, ***use the Change feature with caution****. Measures and points are never undefined, but they default to a value of 0 ("Start" for points) before they are first set.*

6.11 Delete measure

Procedure:

Tab Panel -> Measure->Edit ->Delete

Delete Measure lets you delete a measurement from the project.
Choose the measurement from the list that appears, and its definition is removed from the project.
You are not allowed to delete a measurement that is referenced by the calculations for another measurement or point, unless you delete all its dependencies first.
MacroGen will give you a message that the measure is referenced by another point or measure and can not be deleted.



6.12 Logic

It is possible to make measures that don't always follow the same formula.
To apply "if-then" logic to measures, see Working with Logic 140.
(This is not the same as using a Style dependent measure) 56

Logic can be used for several reasons. For example, if you want to put in extra ease if the bust width is large, you'll use logic. If you have a table of values that is dependent on measures, you'll use logic. There is an endless number of possibilities where you may want to use logic.

6.13 Measurement Tables

There are several types of measurement tables:

Master Measurement Tables (.MMT)
This is a "template" file that lets your user know which measurements are required for a macro. The user will open this file and replace the existing default numbers with their own. They will save their changes in their own .MTB file.
MacroGen programmers also use .MMT tables to import common groups of measurements, that are used in more than one MacroGen project.

See Master Measurement Table 79.

Personal Measurement Table (.MTB)
This is a personal measurement table. The PatternMaker user opens the .MMT and replaces the standard measurements with her/his personal measurements. When he saves his measurements the file becomes a .MTB file.
So the .MMT has to be provided in your installation. The user uses this personal measurement table for every macro from your collection(s).

See Personal Measurement Table 80.

Standard Measurement tables (.MTB)
This is a set of "standardized" measurements that you can provide, if you wish, in your installation.
The user has the option of selecting one of these sets of measurements instead of their own. For example, you could include measurement tables for standard industry sizes 6-8-10-12 (or 36-38-40-42) etc. Including any .MTB files is entirely optional. .MTB tables are created either by the Macro Installer, or by the PatternMaker program. Read the manuals for those programs for more details.

See Standard Measurement Table 81.

Reusing Measurement Tables
If your drafting system consistently uses the same set of prompted measurements, you can save them in a list and import them into new macros.

See Saving and reusing default measurements 77.

6.13.1 New Table

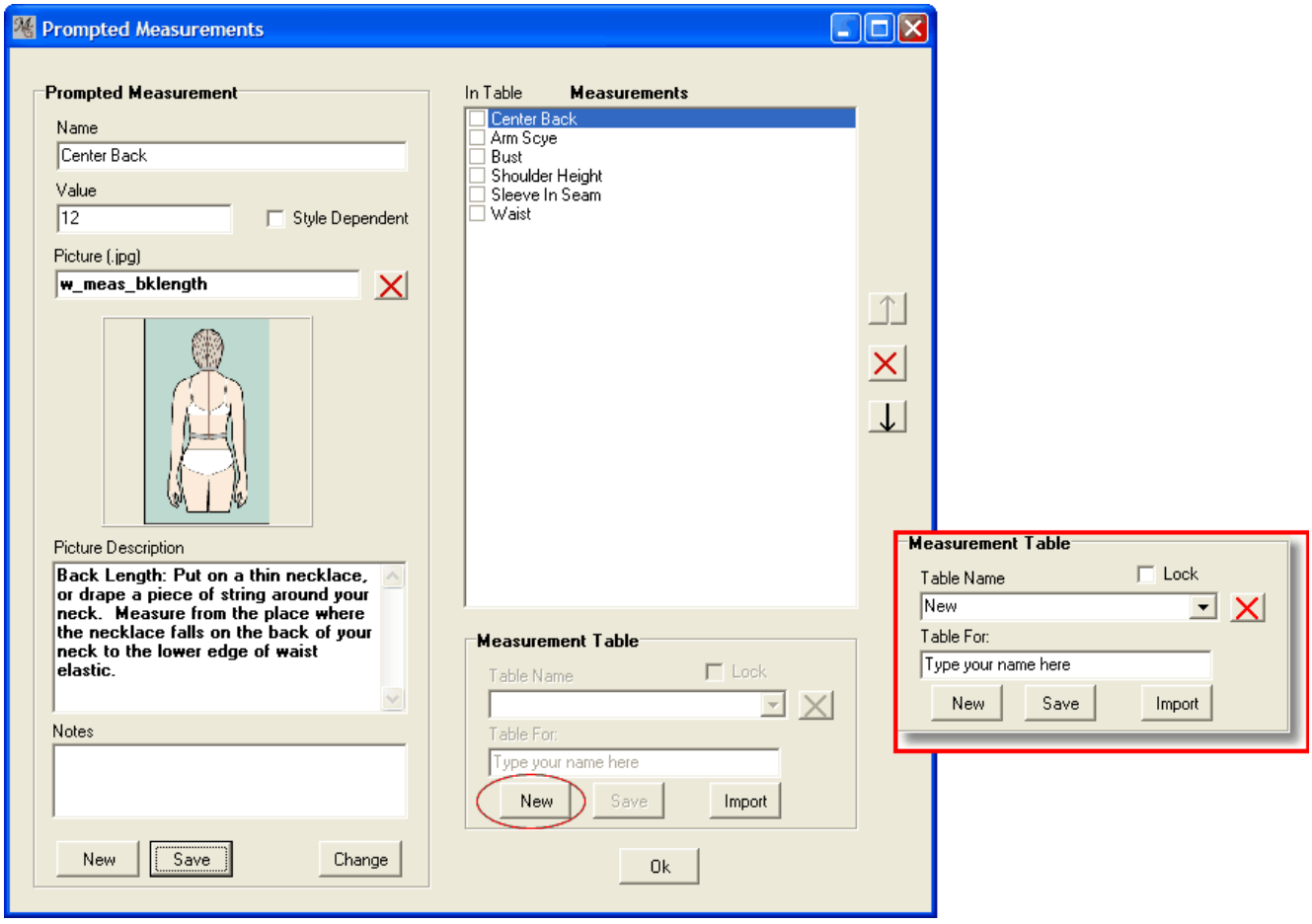
When you want your macro to ask the user in PM to open a measurement table (see picture below), then you should begin with this command.
This command inserts a code into your current macro.
The result of this code is that PatternMaker adds an extra dialog box to the macro for connecting a .MTB file to the macro.
The chosen .MTB can be a personal measurement table or a standard size table.
When you run the macro, the macro comes with a dialog box to "open a measurement table."

Procedure:

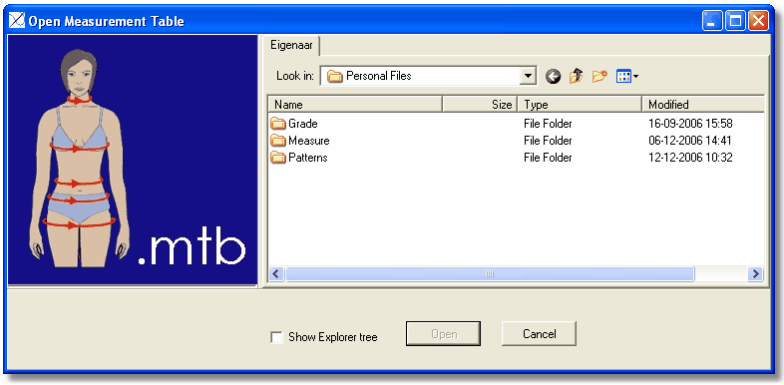
Tab Panel -> Measure->Edit -> Table (F4)

1. Click on New.
2. Type in the Table Name 74.
3. Type in the Table For 75.
4. Check all the measurements you want to include in this table. All the prompted measurements that were allready made are visible in the list at the right side. See Measurements in Table 76.

5. Attach pictures and text to each measurement. See Add Picture to Table 55
6. Save to table 77.



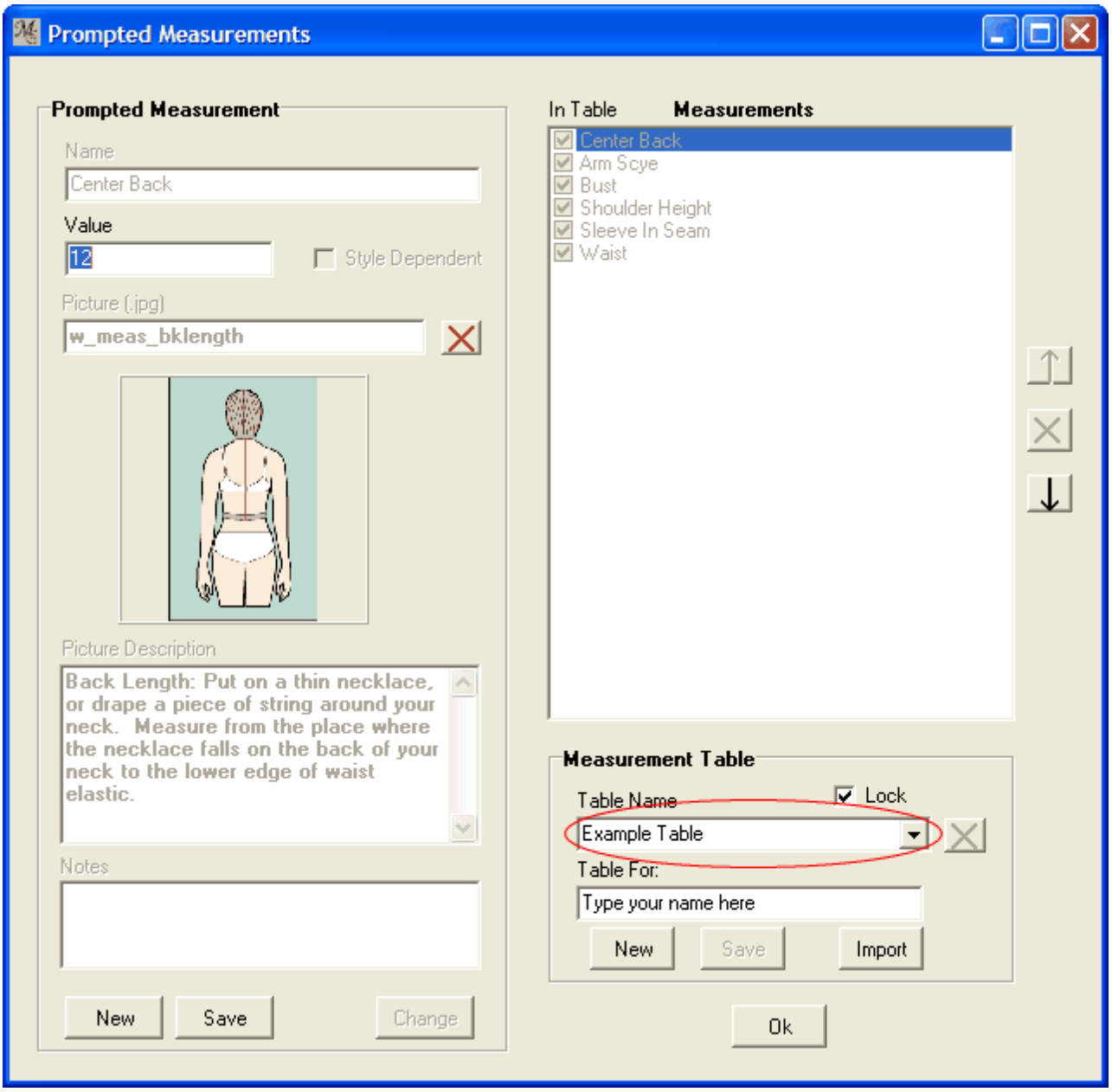
When running the macro in PatternMaker the user sees the following box appear:



Dialog box 'Open measurementtable" in PatternMaker

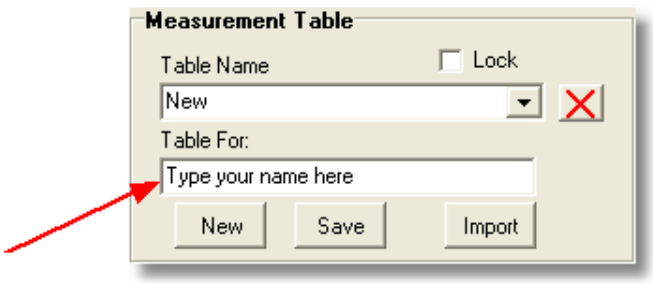
6.13.2 Table Name

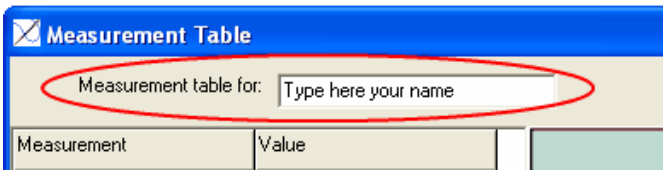
The table name is included in the macro.
It needs to be a unique name since PatternMaker will only show the .MTB files created from this table. If two designers use the same name PatternMaker will allow both tables to be loaded. This will create problems. We advice you to add your designers name to the name of the table like "Leena_default women".
The user will never see this name.



6.13.3 Table For

The **Table For** field is the title that appears in the dialog box when the user opens the table in PatternMaker with the command "Settings->Create measurements"



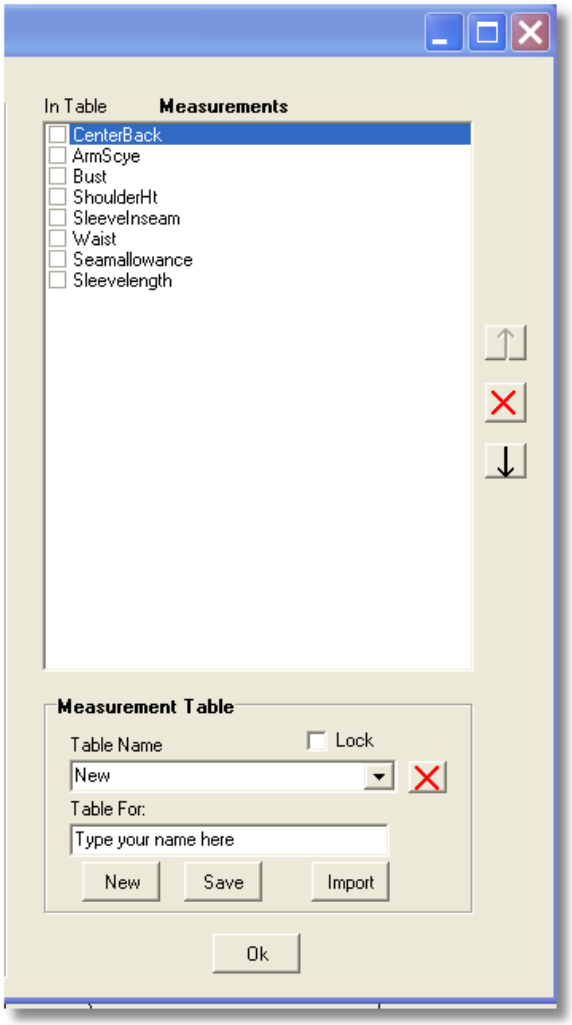


Is showed in PM as...

6.13.4 Measurements in Table

Purpose:

This **Prompted Measurements** box contains a list of all the prompted measurements that are defined in the MacroGen project, with check-boxes.
Check those ones that you want to appear in the table.
The rest (unchecked measurements) appear in a second or third table after you connect the .MTB file with the macro. From each style the prompted measurements will be shown in a separate box.

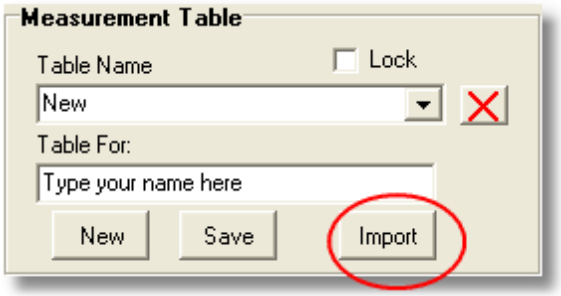


Checked measures will belong to Measurement Table.

6.13.5 Import from Table

Purpose:

The "**Import from Table**" button opens an existing measurement table (*.mmt) file into your current macro.
When you click this button, a standard Windows file selection dialog box appears. When you select a file, the "Measure Table" dialog box is populated with its information.
Notice that all of the measurements for the current project also appear in the Measurements in table 76 field if they weren't already in the table, so you can add them to the table if you wish.



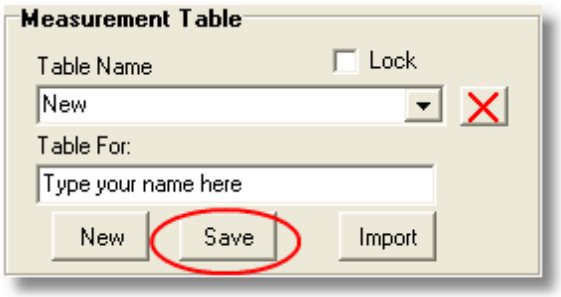
Notes:

- *When you start a new macro and want to use the same measurements or a few of these measurements, import the table again to avoid mistakes and your user can use the same .MTB file again for this macro!*

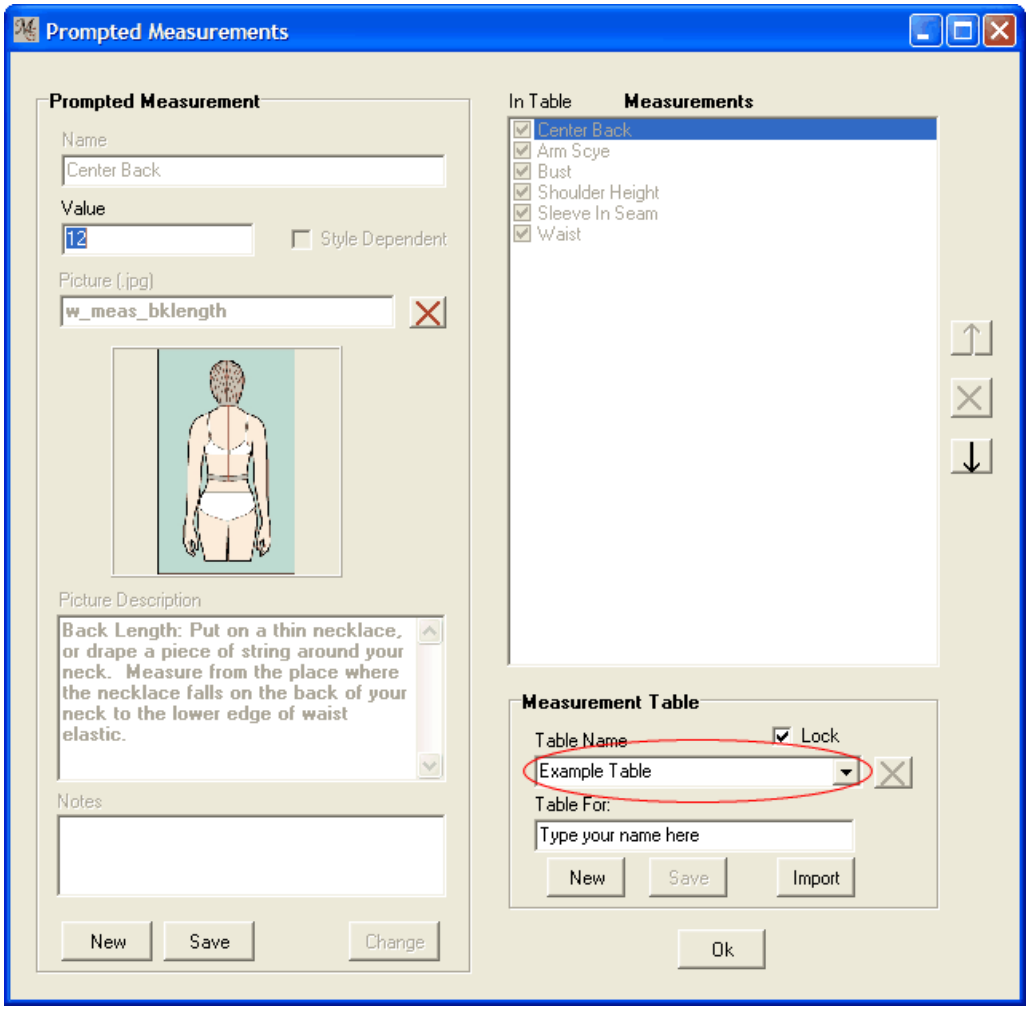
- *When you only use a few measurements from this table, the rest of the measurements in this table are ignored and the user will not be asked for them. You don't have to delete them from the table.*

6.13.6 Save Table

Using the **Save** command in the Measurement Table field, the measurement table, the table name, the default value, pictures and descriptive text are saved as a file with the extension **.mmt** (Master Measurement Table).



You should give the table a descriptive, unique name. This name will be used internal for connecting the right measurement table to the macro.
After saving the measurement table the checkbox Lock is checked and all measurements that have been checked above are greyed out.
This means that changing the table can not be done by accident. When you want to change the table you have to unlock the checkbox. After that it is possible to change the measurements in your table.
However, it is always possible to change the values of your prompted measurements even if they are in a locked table.



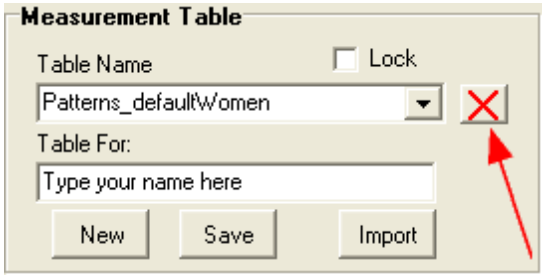
When the macro runs in PatternMaker, it will prompt the user to open a .MTB file for the macro. Only those measurement tables that have internally the Table Name will be shown at that moment.

Tip:
A good descriptive name for an .MMT is your designer name plus the category for which gender this table is. For example: Leena's-Ladies.mmt or Leena's-Children.mmt

See also:
Master Measurement Table 79

6.13.7 Delete Table

The **Delete** button empties all the fields in the dialog box.



NOTE: Use with caution--it can't be undone.

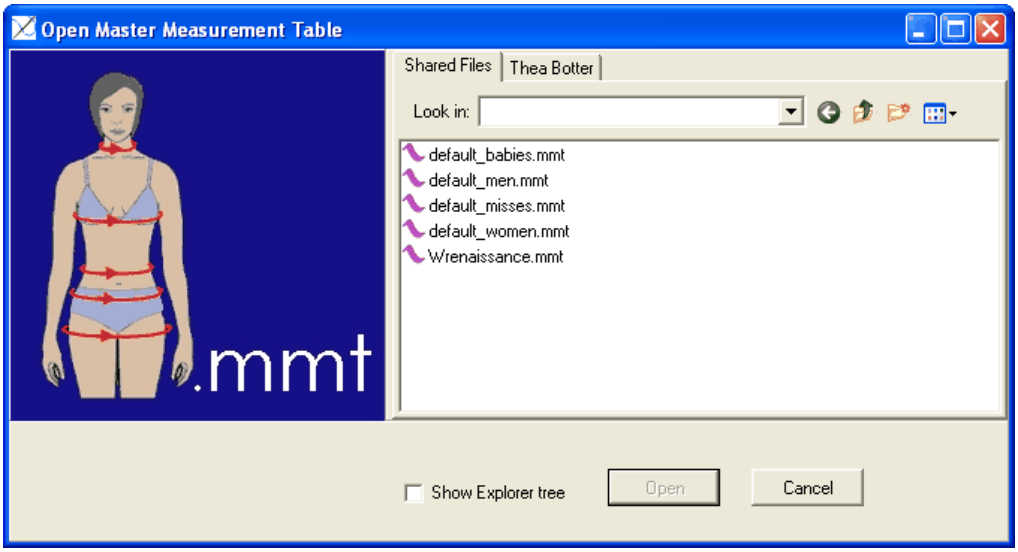
6.13.8 Master Measurement Table

A **Master Measurement Table** is a file (***.mmt**) with a list of values for all the measurements for a particular macro.
Instead of entering the measurements one at a time, the user can import an entire table. This avoids having to type in the same numbers over and over every time a user runs a macro, which is both tedious and prone to errors.

When the user is creating a Measurement Table, he is given the option of loading a Master Measurement Table by the same dialog box that prompts for measurements. After he selects the right .mmt, the table is loaded and the default values of that table show up in the dialog box. The user can change them with their personal measurements and saves the table. It will be saved as a **.mtb** file and in this file PatternMaker can read from which .mmt this table is made.

Measurement Tables are useful any time a macro or set of macros will be reused often with the same or similar measurements.
Examples are: during testing, when a custom tailor makes many garments for a single customer, or when a fashion house has a specified set of measurements for its standard sizes.

A Measurement Table has an internal name, the name of the table. We advice to give the measurement table a descriptive name for instance "Leena_default_women". A user can tell which one to use for a particular macro.
In the macro is described which measurement table (internal name .mmt) should be connected to the macro.
When you run a macro PatternMaker will look for .mtb files with this internal name written in it. Only those .mtb's with this internal name in it will be shown, when the Open Measurement Table form appears. It is therefore not possible to connect a wrong .mtb file to a macro, made with another .mmt .



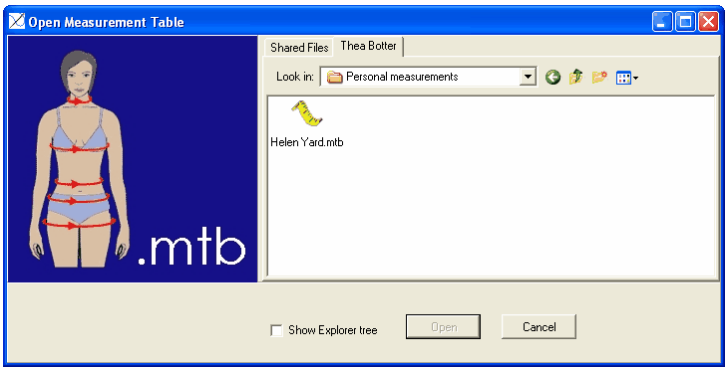
6.13.9 Personal Measurement Table

A personal measurement table is made from the original .MMT and made in PatternMaker by the user of the macro. You have to provide the original .MMT from your macros into the Installation. The user can make a personal measurement table with the following steps:

Procedure:

1. Start PatternMaker. Select "Create Measurements" from the **Settings** menu.
2. The location where your .MMT template file is saved, opens.
3. Select the right .mmt.
4. Fill in your name in the Name field. Replace the default numbers with the appropriate numbers for one "personal" size.
5. Save the file. (Notice that it is automatically saved in the .MTB format. You can never accidentally overwrite the original .MMT file.

   It is helpful if you name the file with the name of the user, the file is for. For instance Helen Yard.mtb
6. Repeat steps 3 and 4 for every person you want to create a personal measurement table for.
7. The user can use this personal measurement table for every macro in your collection. It is unlikely that your .MTB will be compatible with macros from other designers.

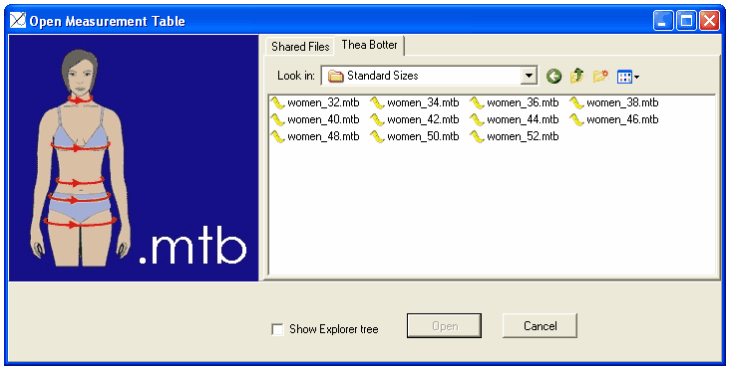


6.13.10 Standard Measurement Table

If you wish, you can include one or more "standard" measurement tables for your users to choose from.
For example you can add the standard sizes tables of size 6-8-10-12 or 36-38-40-42 etc.
Note that these are .MTB files (the personal measurement tables), not the .MMT file (Master Measurement Table, or "template file".)

Procedure:

1. Create an .MMT in the measurement template file (for instructions see MMT 79)
2. Start PatternMaker. Select "Create Measurements" from the Settings menu.
3. Navigate to the location where your .MMT template file is saved, and open it.
4. Fill as name the name of the size. Replace the default numbers with the appropriate numbers for the "standard" size.
5. Save the file. (Notice that it is automatically saved in the .MTB format. You can never accidentally overwrite the original .MMT file.) It is helpful if you include the size in the file name.
6. Repeat steps 3-5 for each sample file (standard size) you want to include.
7. Finally, include the .MTB file(s) in your installation. (Use the Collection Creator for this.)



6.13.11 Working with Multiple Tables

You can use any number of tables in one macro file. The user is prompted for one after the other. For instance, the first table might contain a standard set of body measurements, and a second table might contain measurements for specialized items such as lingerie.

Procedure:

Tab Panel -> Measure -> Edit -> Table

1. Click New.
2. Type the Table Name.
3. Type the Table For.
4. Check the measurements that must be in the first table (body measurements).
5. Add pictures and text to the measurements.

6. Save the table.
7. Click New.
8. Type the Table Name for the second table.
9. Type the Table For.
10. Check the measurements that you want to include in the second table (lingerie measurements).
11. Add pictures and text to the measurements.
12. Save to table

The rest of the measurements that are not in the first or the second table are asked in separate measurement dialog boxes, one for every style.

Part 7

Working with Points

7 Working with Points

Points are the basic building blocks of a MacroGen pattern.
Each point has an **X and Y value** that are calculated based on the formulas you program and the measurements the user enters.
Every time the user runs the macro, all the points are recalculated. The formulas that determine the locations of the points also determine the sizes and shapes of the objects that are made from those points.

Every point you define goes into a list.
These points can be used to help define measurements, to locate other points, and finally to draw the pattern objects.

A discussion of the various uses of the term "point" is at What is a Point? 158

The point functions let you **add** points to the point list, **edit** and **delete** them. The different point types listed under Add Points 86 give you a variety of formulas to define where a point goes. These simulate various pencil-and-paper operations such as marking off a measured distance, taking the intersection of two lines, and so forth. The selection of point types was chosen by the people at PatternMaker Software to make it possible to express every common step in flat pattern drafting as a mathematical operation.

7.1 Point types

The placement of any point in your drawing is always relative to at least one other point. When you place your first point, its position is figured some distance left or right, and up or down from the Start point. The positions of all other points will be figured in one of these ways:

- **Relative to one existing point**
  See: Adding a point relative to one other point (COORDINATE) 88
- Relative to two or more existing points

  See: Halfway between two existing points (CENTER 89)

  Using the coordinates of two existing points to place a new point (RECTANGLE 90)

  (This is the same as drawing a horizontal line from one point (Y), and a vertical line from the other point (X))

  On a line defined by two existing points (CONTINUE 91)

  At the intersection of two lines (LINE LINE INTERSECT 92)

  At the intersection an Arc and a line (ARC LINE INTERSECT 93)

  At the intersection of two arcs (ARC ARC INTERSECT 94)

  On a line at a certain distance from another point (LINE DISTANCE 95

  Placing a point for the opening of a dart (DART 96)

  Forming a right angle from a leg point and a corner point (LINE POINT 97)

  Forming a right angle from two leg points (RIGHT ANGLE 98)

  At the offset distance of a point (OFFSET DISTANCE 99)

- **Emulating a PatternMaker command.**
  The following point types place a point as though it had been moved there with the given PatternMaker edit command, using points and measures in place of mouse inputs:

A mirror image of a point across a line (MIRROR 101)

A rotation of another point by an angle (ROTATE ANGLE 102)

A rotation of another point by a certain distance (ROTATE DISTANCE 103)

A move of a point by a single scaling factor (SCALE 105)

A move of a point by two scaling factors (RESIZEXY 106)

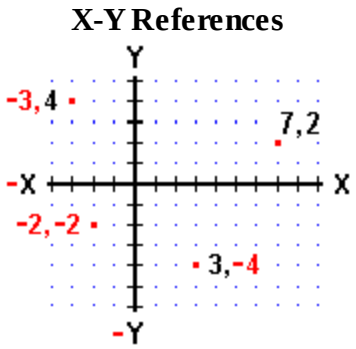
A move of a point by an amount marked between two reference points (MOVE 107)

A corner point to shape an arc that has been cut (PLACE CORNER 100)

- **Conditions.**
  A Condition is not really a point; it is a set of programming logic instructions (IF-THEN 140 and more) that can change the values of points that have already been created. Conditions take their place in the point list along with regular points.

- **Code Points.**
  A Code Point is created with no rules. The MacroGen programmer writes code in the PatternMaker macro language to set its value. Code 159 points are for advanced users only.

7.2 Coordinates



MacroGen uses a grid system of **X and Y coordinates**.
Coordinates indicate the position of a point on a grid, and appear in the format (X,Y).
The "**X**" number represents units of measurement in the horizontal direction, and the "**Y**" number represents units of measurement in the vertical direction. These units can be either inches or centimeters.
(You can switch from inches to centimeters by using the Inches or Centimeters command on the Settings menu.)

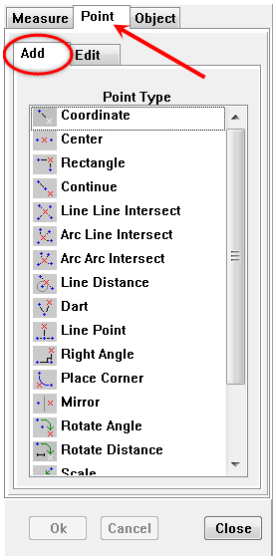
The coordinate origin in MacroGen is an arbitrary point named "Start." Start is defined in every MacroGen project and is the point (0,0) in ordinary Cartesian coordinates.

See also:

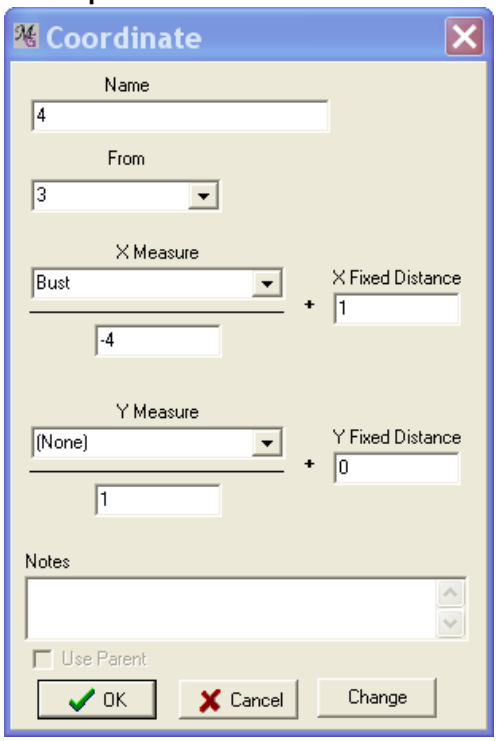
Settings/Units 148

7.3 Add Points

The various functions in the **Tab Panel / Add**... each create a new point in your point list.
The difference between one point type and the next is that each uses a different formula to calculate the point's X and Y coordinates.
Here are some common features of the dialog boxes for all the point types:



Here you see an example of a **Coordinate point**.



coordinate point

- **Using the name field**

The Name field (see up) is the name of the new point. Required.
It can be a number (1) or a letter (a) (A) or a combination of both (A1).

Note: For MacroGen using "a1" or "A1" as a point name has the same meaning and can only be used once. This means you can not use both names at once, but you can give a point the name a1 **or** A1.
Note:
It is good practice to use an F as prefix for the Front pieces and a B for the Back pieces. (see Tutorials 177)

- **Using the to, from, start, end fields**

Most point types contain fields with pull-down lists and titles such as To, From, Start, or End.
These are for selecting points when the new point's location is measured relative (to, from, etc.) to other points.
The use of points varies from point type to point type. Required.

- **Using X and Y measure fields and their Fixed Distances.**

All measures in Add Point dialog boxes appear as part of an equation. You can multiply or divide the measure by a number, and add or subtract a fixed distance value. The constant value field under the measure field is the divisor factor. Used together with the X Measure or Y Measure field, it provides a way to divide or multiply a variable distance in your drawing.
The number you enter in the constant value field is what the measure field will be divided by. (In MacroGen versions 3 and earlier, it was actually called "scale." Now it simply appears under a dividing line in the equation.)
For example, if you select "Bust" as the measure and enter a constant of "-4" the bust variable will be divided by 4, and the point will be placed at the left side (the minus before the value) at a distance of 1/4 of whatever the bust measurement is.
You can use either a positive or a negative number in the constant value field, depending on which side of the From Point you want the new point to be (see X-Y References, above).
Measures are optional. If you choose (None) for a measure, this portion of the formula is not used (a value of 0 is entered).
There is also a Fixed Distance field, which is shown after the + sign. This is simply a fixed number that is added to the equation.
Constants and Fixed Distances are optional. By default, all divisor constants are 1 and fixed distances are 0.

This Coordinate point is measured from a **"From"** point, in this case the point 3. There are two equations used to calculate the new point's location.

The X component of the calculation is the Bust measure divided by 4. Then a fixed distance (1) is added to the measure. This distance is measured in the negative X direction (to the left) from point 3.

The Y component of the calculation is not measured (None). No fixed distance (0) is added to the measure.

- **"Use Parent" check-box and Style Tree**

See Use Parent 113.

- **OK, Cancel, Change buttons**

The "OK" and "Cancel" buttons are self-explanatory. The "Change" button lets you change the point to another point type, depending on what points are already made.

- **C-Clockwise check-box**

See C-Clockwise 114.

- **Notes**

See Notes 53.

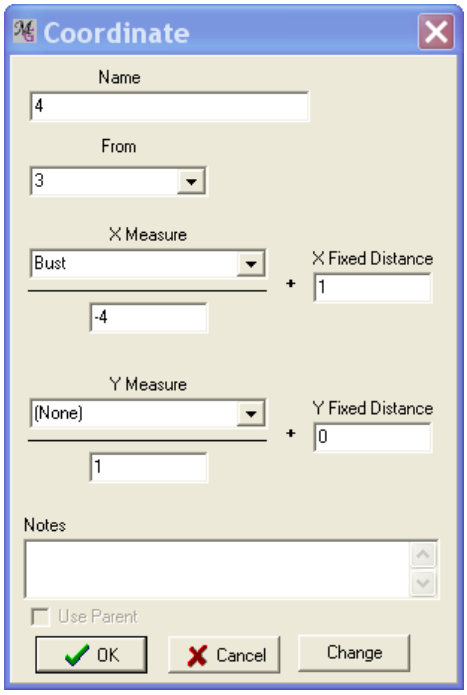
Disabled point types

Point types that cannot be defined are disabled in the Add and Change dialogs. This happens because certain point type definitions depend on other points (up to six) and measures. If there are not enough points and measures available to define a point type, that type is disabled. This usually happens when starting a new project, or editing a point near the beginning of the point list.

See for more practice the Tutorials 177

7.3.1 Coordinate

A **Coordinate point** is based on another point, offset by a distance in the X coordinate and a distance in the Y coordinate.
There are separate equations for each coordinate.



Procedure: Tab Panel ->Point->Add ->Coordinate Point

Name : Type the name of the point

From : Point. The point to measure the x and y coordinates from. Select from the pull down box a point from the list of points.

X Measure : Choose a Measure from the pull down box for the distance in X coordinate
And/or type a number in the constant value (A minus will go to the left of the from point)

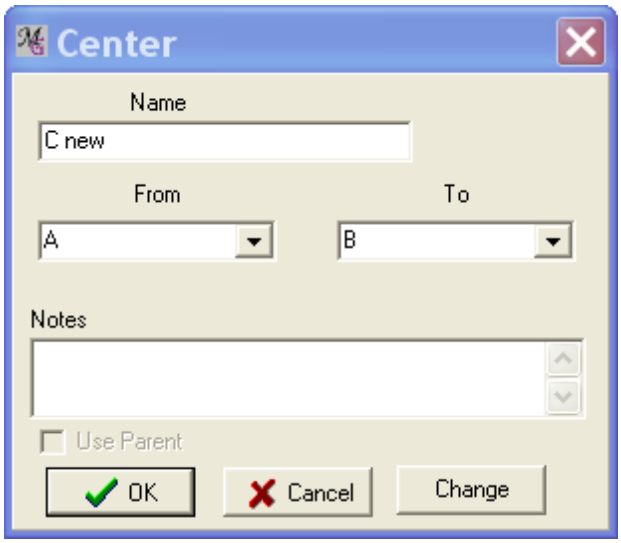
Y Measure : Choose a Measure from the pull down box for the distance in Y coordinate.
And/or type a number in the constant value (A minus will go to the left of the from point)

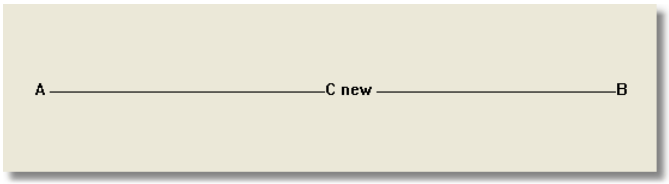
Fixed Distance : Type a fixed distance in the Fixed distance boxes. A minus gives direction to the left of the from point.

Use Parent, OK, Cancel, Change: See Add Points 86

7.3.2 Center

A **Center point** is defined by two other points. It lies exactly halfway between them.





Procedure: Tab Panel -> Point->Add ->Center

Name : Type the name of the point (C new)

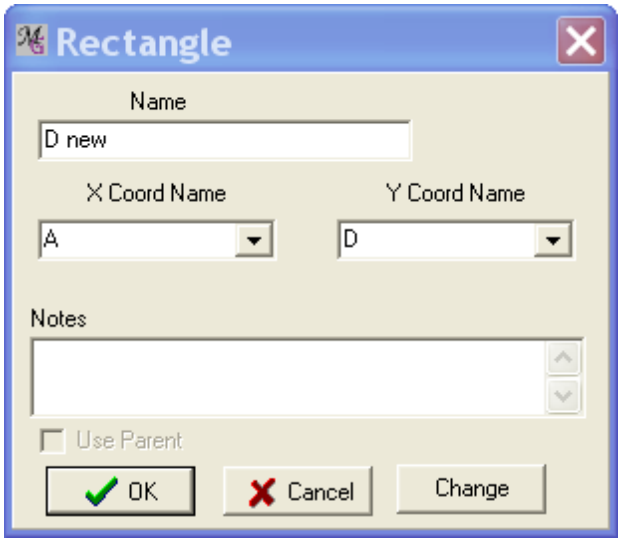
From : Type or choose the first point from the pull down box (A)

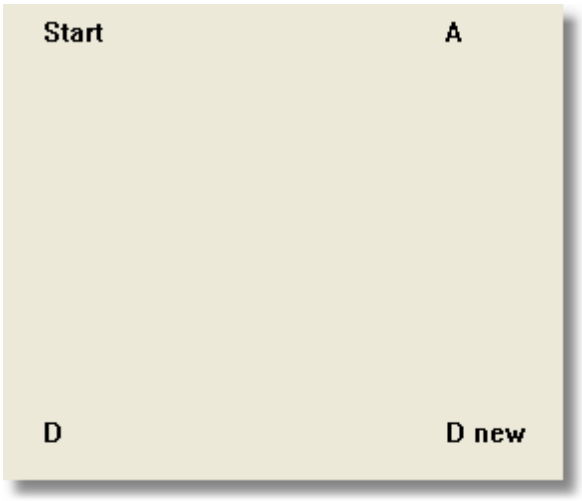
To : Type or choose the second point from the pull down box (B)
It does not matter which order these are in.

Use Parent, OK, Cancel, Change: See Add Points 86

7.3.3 Rectangle

A **Rectangle point** lies at the corner of a rectangle defined by two other points.
In other words, it is the intersection of a vertical line through the first point, and a horizontal line through the second point.





Procedure: Tab Panel -> Point->Add ->Rectangle Point

Name : Type the name of the rectangle point (D)

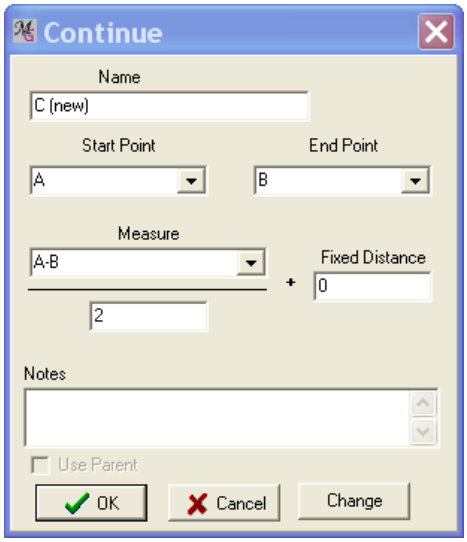
X Coord Name : Point. The new point takes this point's X coordinate (i.e. lies on a vertical line through this point).(A)

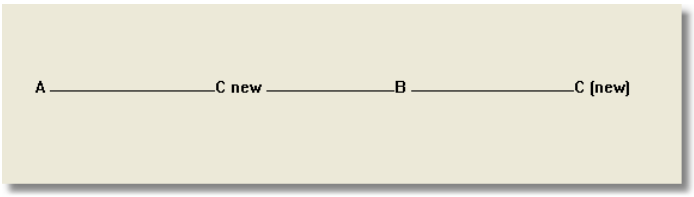
Y Coord Name : Point. The new point takes this point's Y coordinate (i.e. lies on a horizontal line through this point).(C)

Use Parent, OK, Cancel, Change: See Add Points 86

7.3.4 Continue

A **Continue point** lies on or continues a line defined by two points, at a distance measured from the second ("To") point.





Procedure: Tab Panel -> Point->Add ->Continue

Name : Type name for Continue point.Here: C (new)

Start Point : Type or choose from pull-down box a Point. The Start point of the line. (A)

End Point : Type or choose from the pull-down box The End point of the line. (B)
The distance is measured from this point.

Measure : Measure for the distance from End Point.
You can use either a positive or a negative number in the divisor field.
Using a positive divisor value places the point from the End point further along the line A-B. See point C(new).

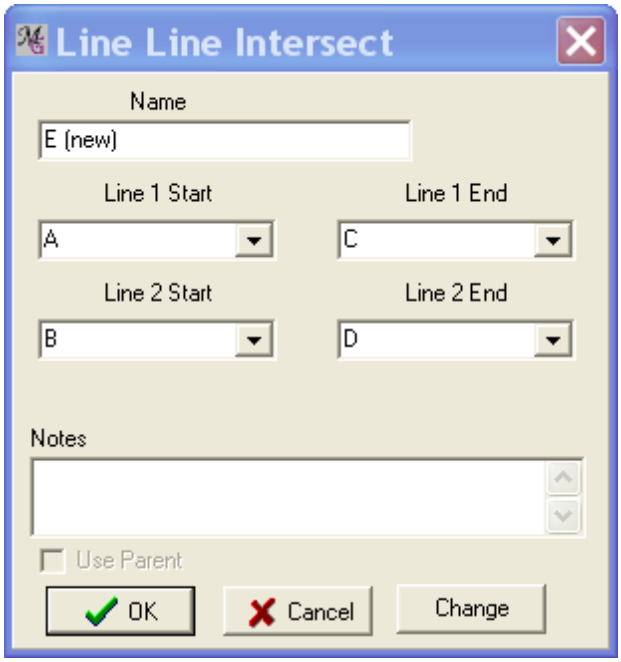
Using a negative divisor value places the point from the Endpoint backwards along the line A_B. See Add Points 86 for a description of the equation format.

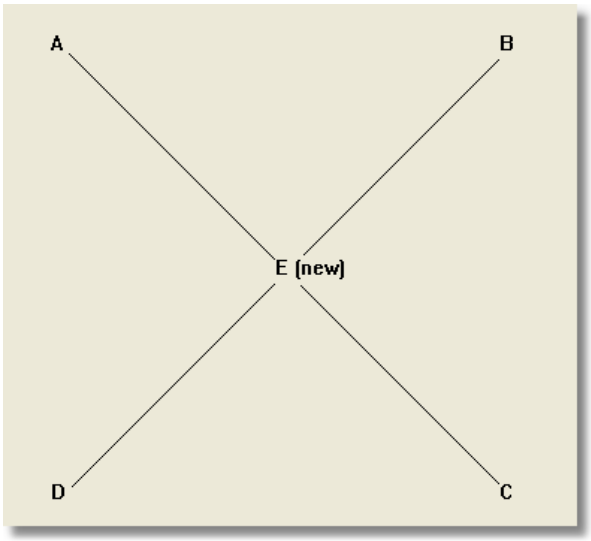
Note:
Point C (new) can be on the line between A - B or on the line after point B depending if you use a minus in the constant value field of the measure.

Use Parent, OK, Cancel, Change: See Add Points 86

7.3.5 Line Line Intersect

A **Line Line Intersect point** is the intersection of two lines.
These lines are each defined by two points.





Procedure: Tab Panel -> Point->Add ->Line Line Intersect

Name **:** Type in the name of the Line Line Intersect point (E new)

Line 1 Start, Line 1 End : Points. These points determine the first line.(A-C)
It does not matter which order they appear in.

Line 2 Start, Line 2 End : Points. These points determine the second line.(B-D)
It does not matter what order the two lines appear in.

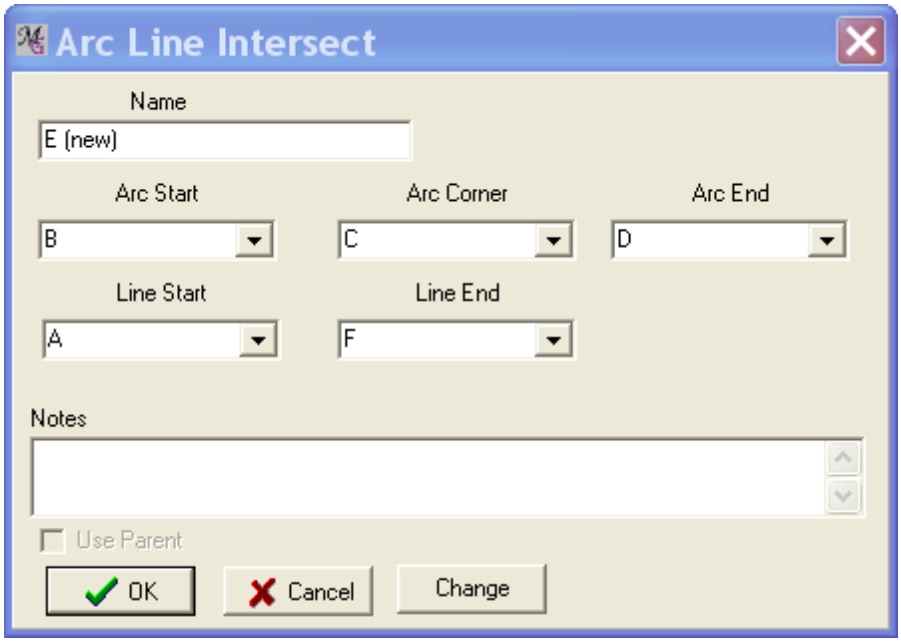
Use Parent, OK, Cancel, Change: See Add Points 86

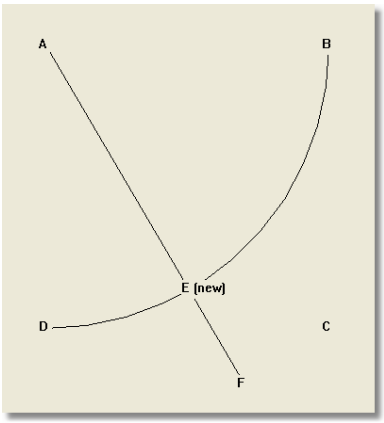
Note:
It is possible for the intersection point to be mathematically undefined if the two lines are parallel, or if the Start and End points of a line are the same. In this case, the new point defaults to the Start point.

Note:
MacroGen extends the lines defined with the two points, this means that an intersection is also possible outside the points of the two lines.

7.3.6 Arc Line Intersect

A **Arc Line Intersect point** is the intersection of a line with an arc.
The line is defined by two points and the arc by 3 points (following the PatternMaker formula for arcs (see PatternMaker manual).





Procedure: Tab Panel -> Point->Add ->Arc Line Intersect

Name : Type in the name of the Arc Line Intersection point (E new)

Arc Start, Arc Corner, Arc End : Points. These points determine the arc. (B-C-D)

Line Start, Line End : Points. These points determine the second line. It does not matter which order they appear in.(A-F)

Use Parent, OK, Cancel, Change: See Add Points 86

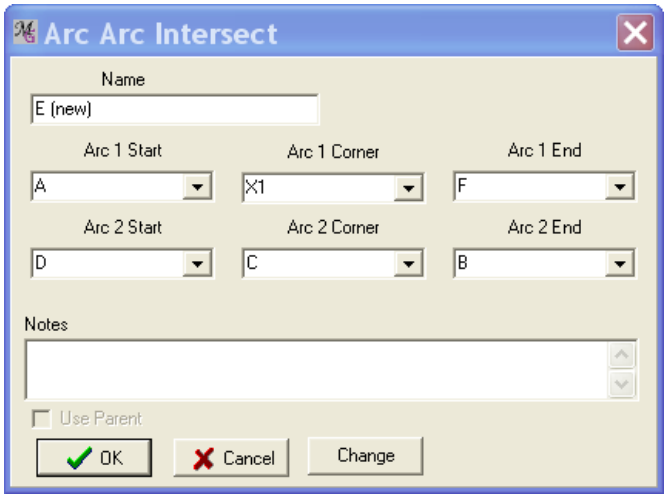
Note:
It is not necessary to actually draw an arc or add it to an object in order to make an Arc Line Intersect point. Any three points can determine an arc.

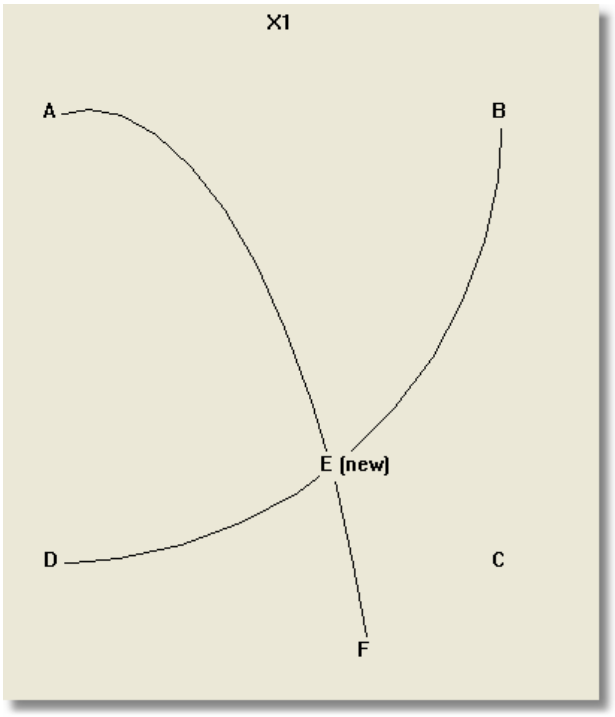
Note:
The line is infinitely long, but the arc stops at its end points. If the line does ***not intersect*** *the arc, the new point defaults to the Start point.*
There should always be an intersection to be sure the macro is working properly.

Note:
It is possible for a line to intersect an arc in two places. MacroGen does not currently support choosing which of the two points is used, but the resulting macro will always use the same point for a given Arc Line Intersect point definition.

7.3.7 Arc Arc Intersect

An **Arc Arc Intersect point** is the intersection of two arcs.
The arcs are each defined by three points following the PatternMaker formula for arcs (see PatternMaker manual).





Procedure: Tab Panel -> Point->Add ->Arc Arc Intersect

Name : Type in the name of the Arc Arc Intersection point (E-new)

Arc 1 Start, Arc 1 Corner, Arc 1 End : Points. These points determine the first arc. (A-X1-F)

Arc 2 Start, Arc 2 Corner, Arc 2 End : Points. These points determine the second arc. (D-C-B)

Use Parent, OK, Cancel, Change : See Add Points 86

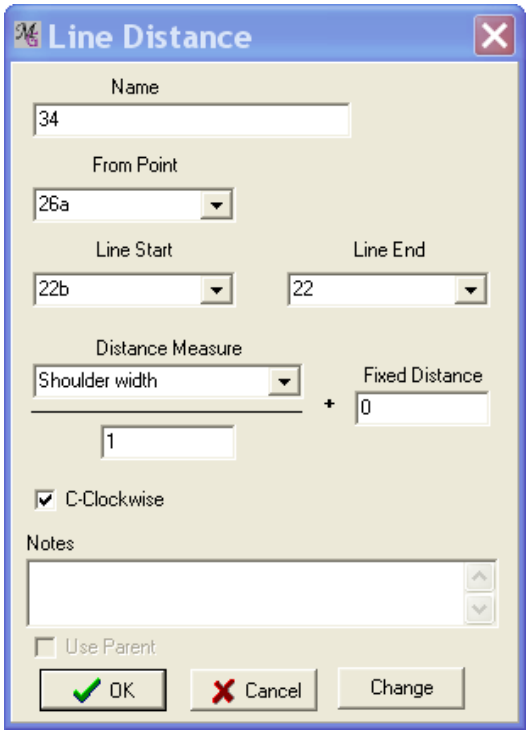
Note:
It is not necessary to actually draw the arcs or add them to an object in order to make an Arc Arc Intersect point. Any three points can determine an arc.

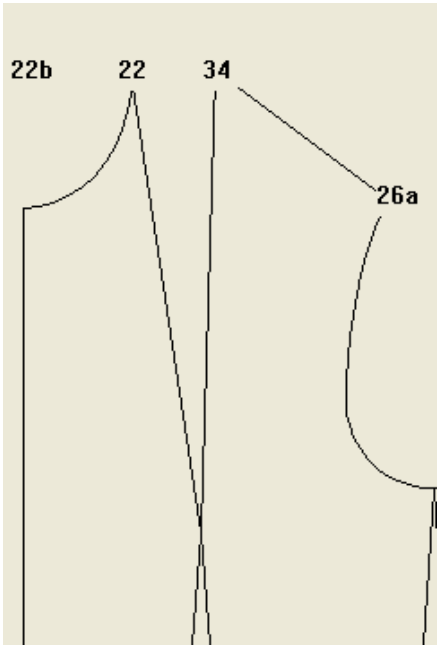
Note:
If the arcs do not intersect, the new point defaults to the Start point.

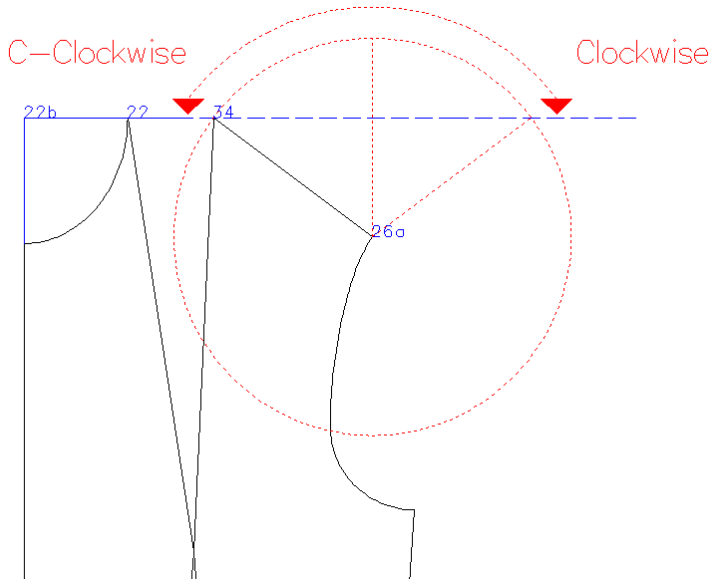
Note:
It is possible for two arcs to intersect an arc in up to four places. MacroGen does not currently support choosing which of the four points is used, but the resulting macro will always use the same point for a given Arc Arc Intersect point.

7.3.8 Line Distance

A **Line Distance point** lies on a given line (determined by two points), at a given distance from a third ("From") point which is not necessarily on the line.
In other words, the new point is the intersection of the line with a circle centered on the From point.







Procedure: Tab Panel -> Point->Add ->Coordinate

Name : Type the name of the new Line Distance point (34)

From : Point. The center of the circle.(26a)

Line Start, Line End : Points. These two points determine the line. It does not matter which order they are given in. (22b - 22).
(Note that the point 34 is placed on the extension of line 22b-22)

Distance Measure : Measure. This equation gives the distance of the new point from the From point. See Add Points 86 for a description of the equation format. (shoulder width)

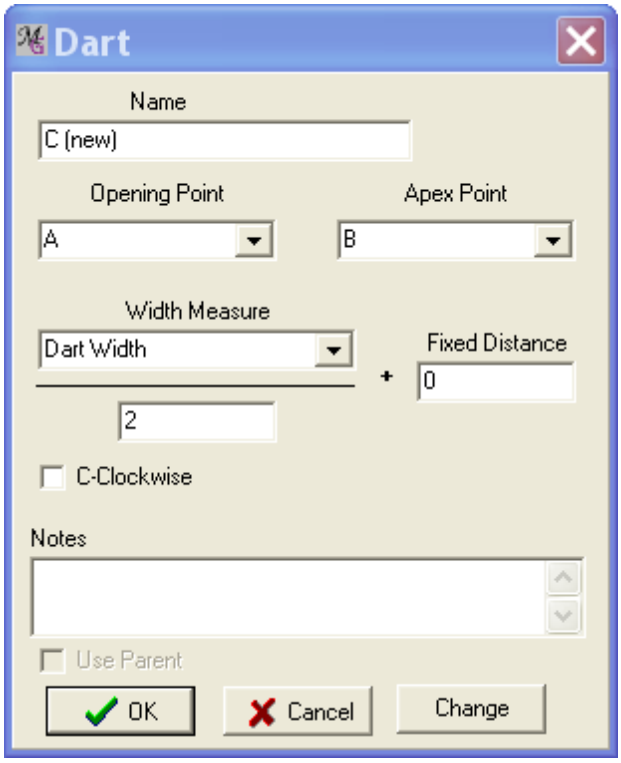
C-Clockwise : This check-box chooses which of two intersection points to use. A line that goes through a circle intersects it at two points. If the C-Clockwise box is unchecked, then the point goes Clockwise (as seen from the From point, looking toward the line) is used. If it is checked, the point goes Counter Clockwise.

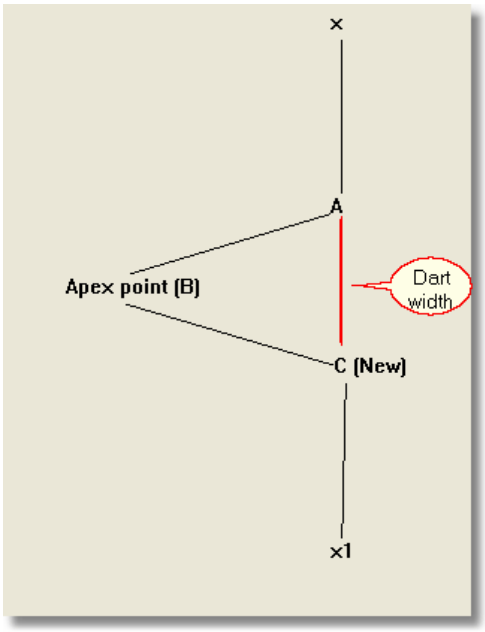
Use Parent, OK, Cancel, Change: See Add Points 86

Note:
If the line does not intersect the circle (if it is farther from the From point than the given distance), the new point defaults to the Start point.

7.3.9 Dart

A **Dart point** marks the third point of a fitting dart.
Three points form a triangle, so that two sides are the same length and the third side is a given length. This is for drawing darts in patterns.
The new point completes a dart that already has an apex (dart point) and one leg (opening point).
The new point marks the other leg, so that the two legs are the same length and the width of the opening is a given value.





Procedure: Tab Panel -> Point->Add ->Dart

Name : Type in the name of the new Dart point (C new)

Opening Point : Point. (A)

Apex Point : Point. (B).

Distance Measure : Measure. This equation gives the width of the opening. See Add Points 86 for a description of the equation format.

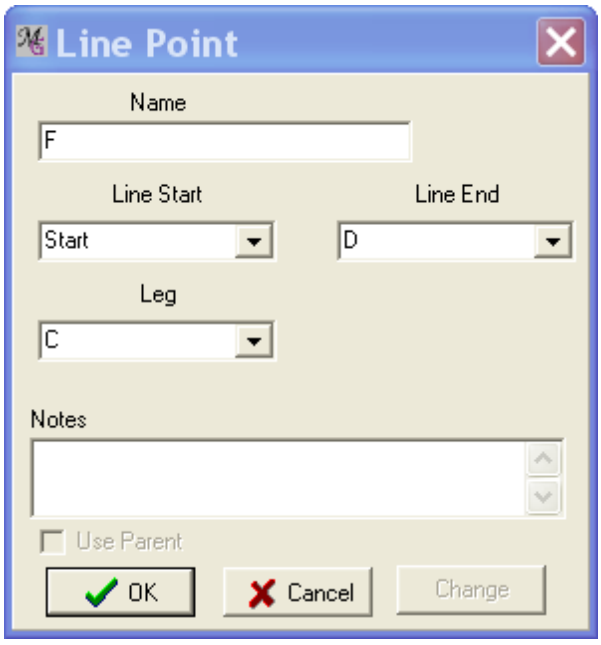
C-Clockwise : This check-box chooses which of two intersection points to use. There are two possible points looking toward the Opening point) is used. If it is not checked, the point on the left is used.

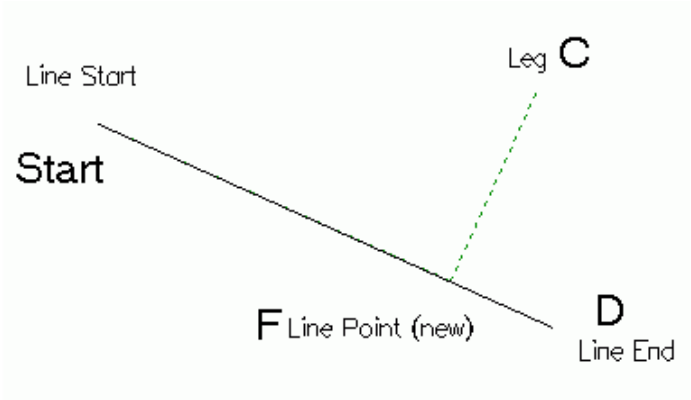
Use Parent, OK, Cancel, Change: See Add Points 86

Note:
If there is no valid point found (the given width is too wide), the new point defaults to the Start point.

7.3.10 Line Point

A **Line Point** marks a perpendicular from a point to a line. In the illustration below, the angle between the solid line and the dotted line is always a right angle.





Procedure: Tab Panel -> Point->Add ->Line Point

Name : Type in the name of the new Line Point (D new)

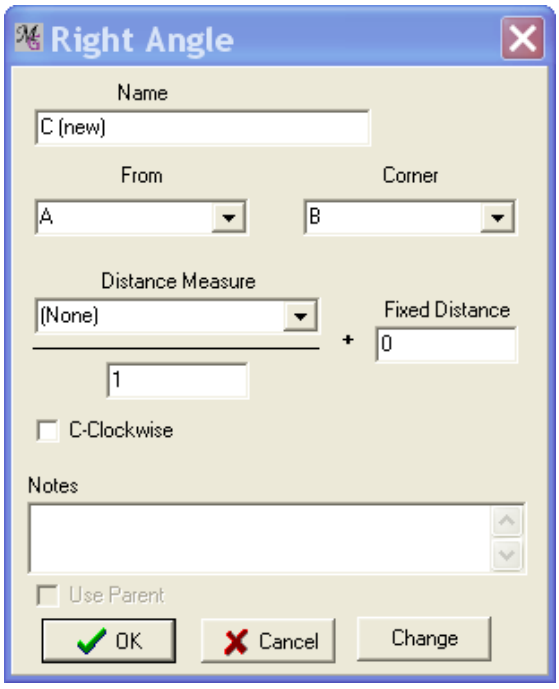
Line Start, Line End : Points. The new point lies on the line that these points define.(A-B)

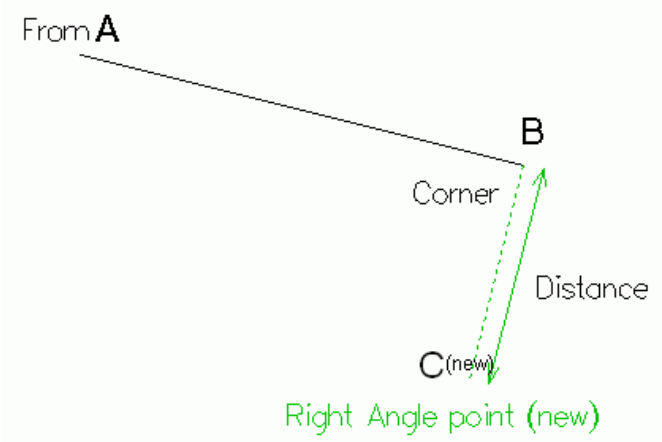
Leg : Point. This marks the third leg of a right triangle (C).

Use Parent, OK, Cancel, Change: See Add Points 86

7.3.11 Right Angle

A **Right Angle point** marks a right angle to a given line.
In the illustration below, the angle between the solid line and the dotted line is always a right angle.





Procedure: Tab Panel -> Point->Add ->Right Angle

Name : Type in the name of the new Right Angle point (C new)

From, Corner : Points. The new point lies on the line that these points define.(A-B)

Distance Measure : Measure for distance from point Corner to the new point. See Add Points 86 for a description of the equation format.

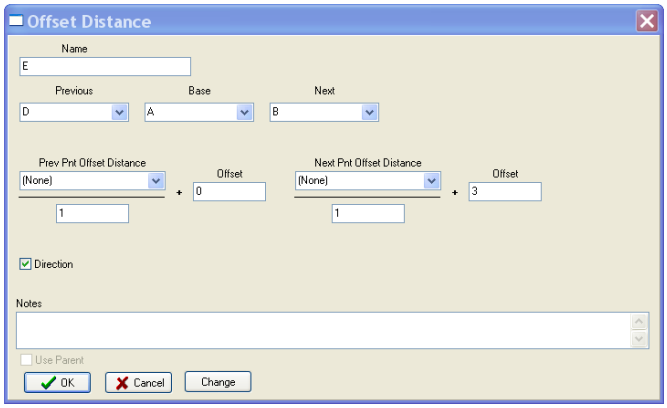
C-Clockwise : This check-box chooses which direction to measure the new point. If the C-Clockwise box is checked, then the third leg (green dotted line in illustration above) is measured to the right of Corner, as seen from the From point. If it is unchecked, it is measured left.

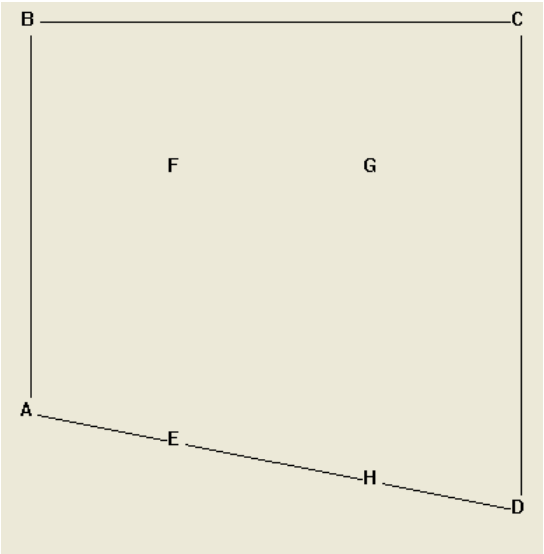
Use Parent, OK, Cancel, Change: See Add Points 86

Note:
The Right Angle point is similar to Line Point 97 except that Right Angle calculates the corner point of the right angle while Line Point calculates the other leg.

7.3.12 Offset Distance

An **Offset Distance point** is a point set at an offset distance from a point.
It is possible to set the offset distance point outside or inside the already drawn points.
In the illustration below, the points E, F, G and H are offset points drawn within the object A, B, C, D.





Procedure: Tab Panel -> Point->Add ->Offset Distance

Name : Type in the name of the new Offset Distance point (E)

Previous, Base, Next : Points. On the previous (D), the base (A) and the next (B) point the new offset distance point is placed.

Prev Pnt Offset Distance : Measure for offset distance from previous point. The offset starts here, therefore the previous point is D and the measure is 0. See Add Points 86 for a description of the equation format.

Next Pnt Offset Distance : Measure for offset distance from base point (A). The offset distance is 3.

Direction : This check-box sets in which direction from the base point the new point is measured . If the Offset Distance point has to be set inside or outside the original drawn points.

Use Parent, OK, Cancel,: Change : See Add Points 86

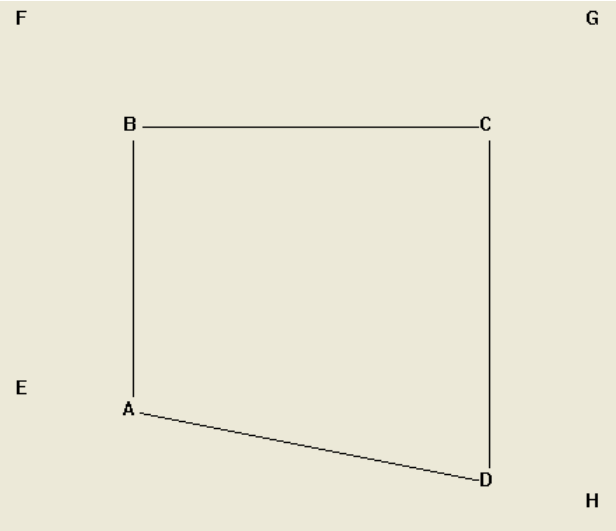
Example:
For point F the previous, base and next points are A, B and C.
The previous pnt Offset Distance is 3 and the Base pnt Offset distance is also 3. The Direction is checked.

For point G the previous, base and next points are B, C and D.
The previous pnt Offset Distance is 3 and the Base pnt Offset distance is also 3. The Direction is checked.

For point H the previous, base and next points are C, D and A.
The previous pnt Offset Distance is 3 and the Base pnt Offset distance is also 0. The Direction is checked.

Direction:
The direction of the Offset Distance point (inside or outside the object) can be set by the measure, a positive or

negative number or by the checkbox Direction.
A positive number combined with a checked Direction box will give the same result as a negative number and an unchecked box.
When in the example above the direction box is unchecked you will get the points placed outside the object(above it is inside the object):



unchecked Direction box

The Offset Distance point works similar as the Snap Offset command in PatternMaker.

7.3.13 Automatic Point Types

The following point types are created by the Edit Macro in PatternMaker 22 function, but they can also be added directly by the user. Each one represents the result of one of PatternMaker's edit functions.

Most of the automatic point types do things that can also be done using ordinary point types and measures. For instance, a Move 107 point could also be made using Distance measures 59 and a Coordinate 88 point. Only the presentation in the dialog box is different.

If it is a point created by editing in PatternMaker you can edit the point to rename it or to adjust the From and To fields.

Also with automatic points often there are new measurements and new points in the list.
You can rename these points and measurements and edit them to get the correct results.

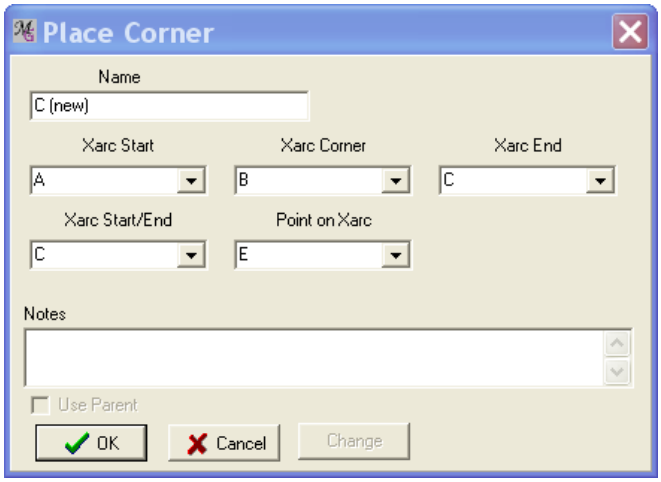
7.3.13.1 Place Corner

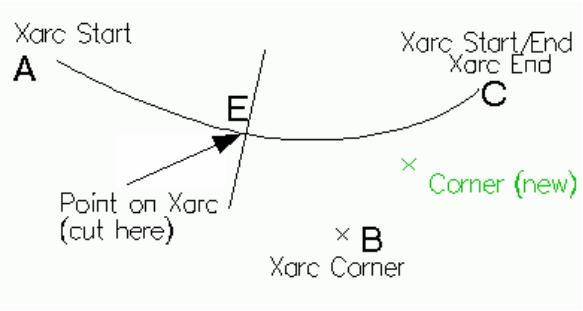
Cut curved line in PatternMaker:
A Place Corner point is used to shape an arc that has been cut with the PatternMaker Cut function.

After a cut command with "Editing in PatternMaker", the object is also cut in MacroGen 4. This action creates several new corner points and objects.
When a Curved line is cut, it creates two new Corner Points called CP and CP(1)

You can edit and rename these new points and objects in MacroGen.

Cut curved Line in MacroGen:
The fields in the dialog box are three points that define an arc, and two points that are the end point's of the arc after cutting.
The result is the location for the corner point of the new arc, so that it matches the shape of the original.





Procedure: Tab Panel -> Point->Add...->Place Corner

Name : Type in the name of the new corner point (Corner new)

Xarc Start, Xarc Corner, Xarc End : Points. Three points that determine the arc, before cutting. (A-B-C)

Xarc Start/End : Point. This is one end of the new arc after cutting. (C-E)
***Note*:** *should be the same as either Xarc Start or Xarc End. MacroGen does not enforce this rule, but results are not defined if it is anything else.*

Point on Xarc : Point. The point where the original arc was cut, therefore also the end of the new piece. This point should already be defined with either Arc Line Intersect, or Arc Arc Intersect, before creating the Place Corner point. **MacroGen does not enforce this rule, but results are not defined if it is anything else.**

Use Parent, OK, Cancel, Change: See Add Points 86

See also : Edit Macro 22

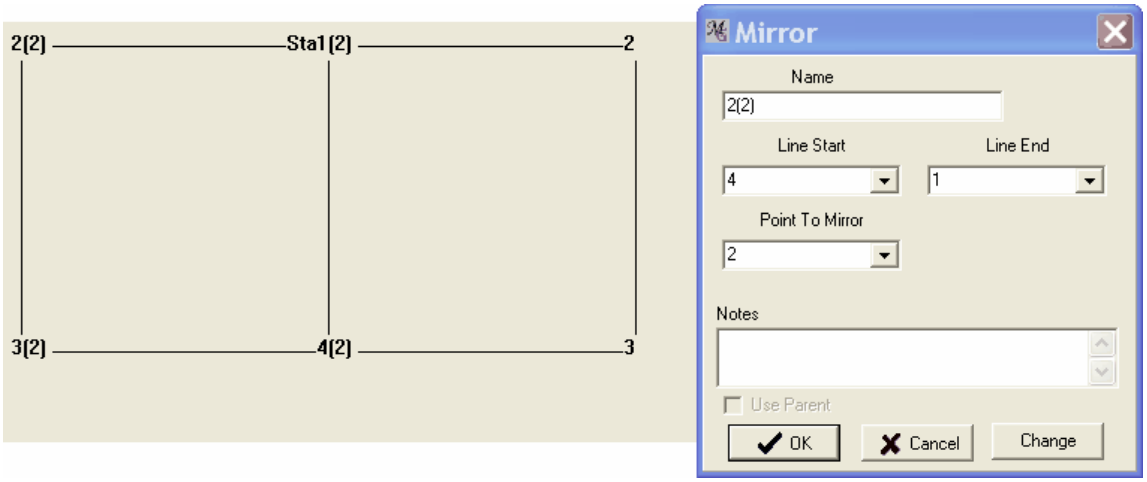
7.3.13.2 Mirror

Mirror command in PatternMaker:
A Mirror point is the mirror-image reflection of a point across a line, as the result of a PatternMaker Mirror function. After a mirror command with Editing in PatternMaker, the object is also mirrored in MacroGen 4. This action creates several new mirror points and objects.

Mirror with no Snap Function:
In the point list, create new points for every mirrored point. The point name gets a (2) extension.
But also there are created a point called "Copy Start and a Copy End point"
These points are from a certain distance of the Start point.

Mirror with using the Snap End Point function:
Create new points for every rotated point, with the (2) extension.
No "Copy Start" and "Copy End "points are created because you defined the reflection line point with the SnapEndPoint function.

You can edit and rename these new points and measurements in MacroGen.



Mirror command in MacroGen:

Procedure: Tab Panel -> Point->Add ->Mirror

Name : Type in the new name of the new mirror point

Line Start, Line End : Points. Two points that determine the line of reflection.

Point to Mirror : The point to be mirrored.

Use Parent, OK, Cancel, Change: See Add Points 86

See also : Edit Macro 22

7.3.13.3Rotate Angle

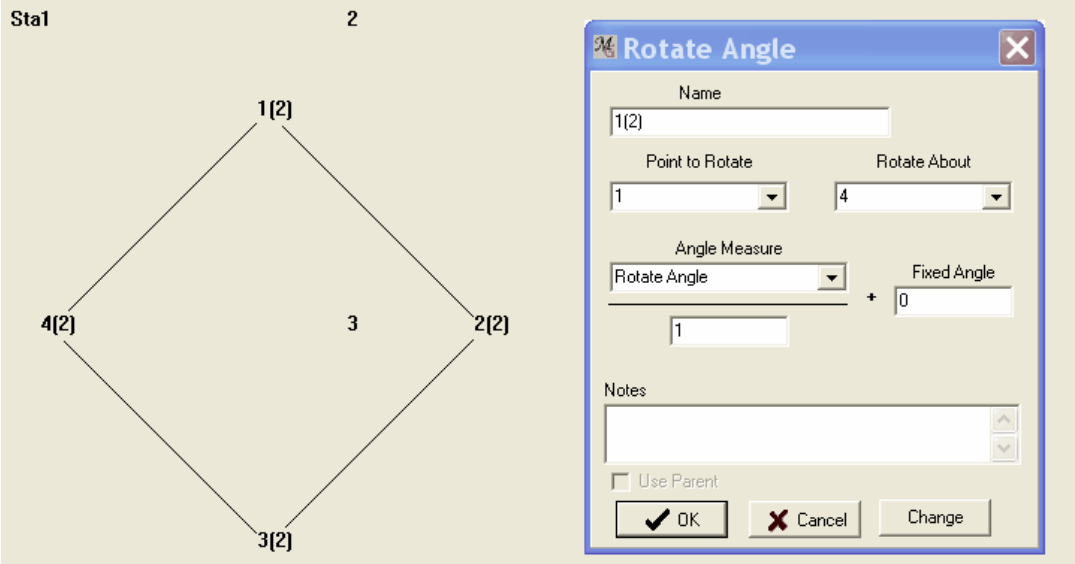
Rotate in PatternMaker:
A Rotate Angle point is the result of rotating a point by a given angle, as in the PatternMaker Rotate function. The angle is measured in degrees. Positive angles are counterclockwise and negative angles are clockwise.

After a rotate command is done by Editing in PatternMaker, the object is also rotated in MacroGen 4. This action creates several new points and measurements depending how you did the rotation in PatternMaker.

Rotate with no Snap Function:
New points are created in the point list for every rotated point, the new point name gets a (2) extension.
A point called "Rotate About" is also created.
This point is a specific distance from the Start point.
There new math measure is called "Rotate Angle" with the value of the rotation in the constant field.

Rotate by using the Snap EndPoint function:
Creates new points for every rotated point, with the (2) extension.
No "Rotate About" point is created because you defined the rotate about point with the Snap Endpoint function. It also created a new math measure called "Rotate Angle" with the value of the rotation (45 degrees) in the constant field.

You can edit and rename these new points and measurements in MacroGen.



Rotate Angle in MacroGen:

Procedure: Tab Panel -> Point->Add ->Rotate Angle

Name : Type the name of the new Rotate angle point

Point to Rotate : Point. The starting position of the rotation.

About : Point. The center of the rotation.

Angle Measure : Measure for the angle to rotate (degrees). See Add Points 86 for a description of the equation format.

Use Parent, OK, Cancel, Change: See Add Points 86

See also : Edit Macro 22

7.3.13.4Rotate Distance

Rotate in PatternMaker:
A Rotate Distance point is the result of rotating a point by a given distance, as in the PatternMaker Rotate function. The rotation is measured in cm or inches. Positive values are counterclockwise and negative values are clockwise.

After a rotate command with Editing in PatternMaker, the object is also rotated in MacroGen 4. This action creates several new points and measurements depending how you did the rotation in PatternMaker.

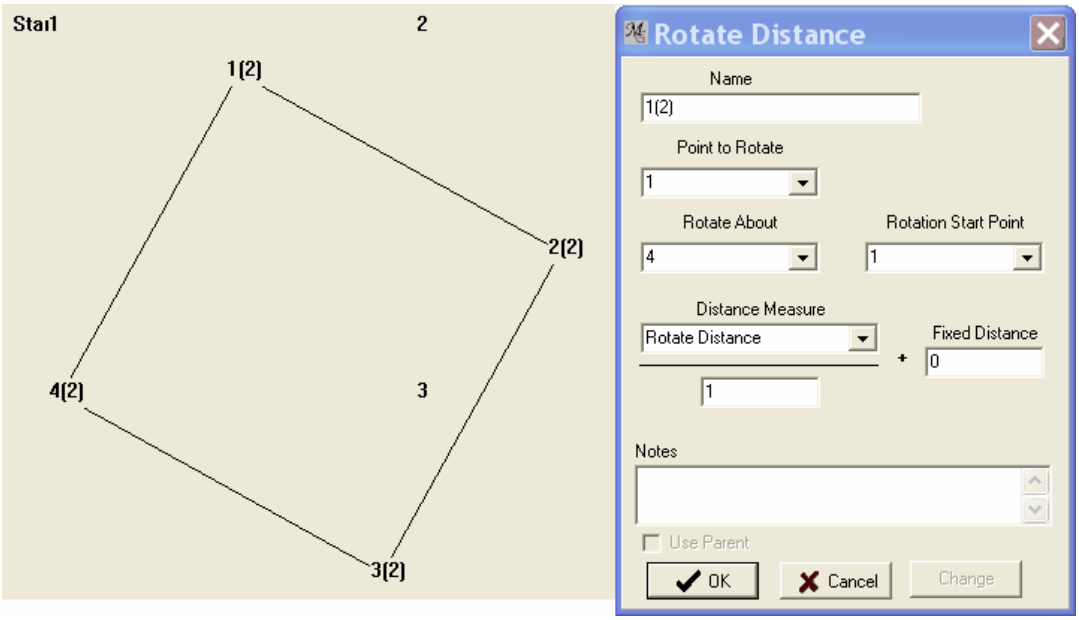
Rotate with no Snap Function:
A new point is created in the point list for every rotated point, the new point name gets an (2) extension.
A point called "Rotate About" is also created.
This point is a specific distance of the Start point.
It also creates the new math measure "Rotate Distance" with the value of the rotation in the constant field.

Rotate with using the Snap End Point function:
Create also new points for every rotated point, with the (2) extension.
No "Rotate About"point is created because you defined the rotate about point with the Snap Endpoint function.

Also a new math measure is created called "Rotate Distance" with the value (5 cm) in the constant field.

You can edit and rename these new points and objects in MacroGen.

Note:
The measurements are Math measurements but you can change them to Prompted Measurements if you want the user type in the amount of rotation for this specific item.



Rotate Distance in MacroGen:

Procedure: Tab Panel -> Point->Add ->Rotate Distance

Name :Type name of new Rotate Distance point

Point to Rotate : Point. The starting position of the rotation.

Line Start : Point. The start point of the rotation or about point

Line End : Point. The end point of the rotation (same as Point to rotate)

Distance Measure : Measure for the final distance between Point to Rotate and new point. An angle of rotation will be calculated. If no such angle is possible (if the distance is too great), the new point defaults to the Start point. See Add Points 86 for a description of the equation format.

Use Parent, OK, Cancel, Change: *See* Add Points 86

See also : Edit Macro 22

7.3.13.5 ResizeXY

The Scale 106 point and ResizeXY 106 point are very similar. Just as with the PatternMaker Scale and Resize functions, the difference is that Scale uses a single scaling factor, while Resize uses two different factors for the X and Y coordinates.

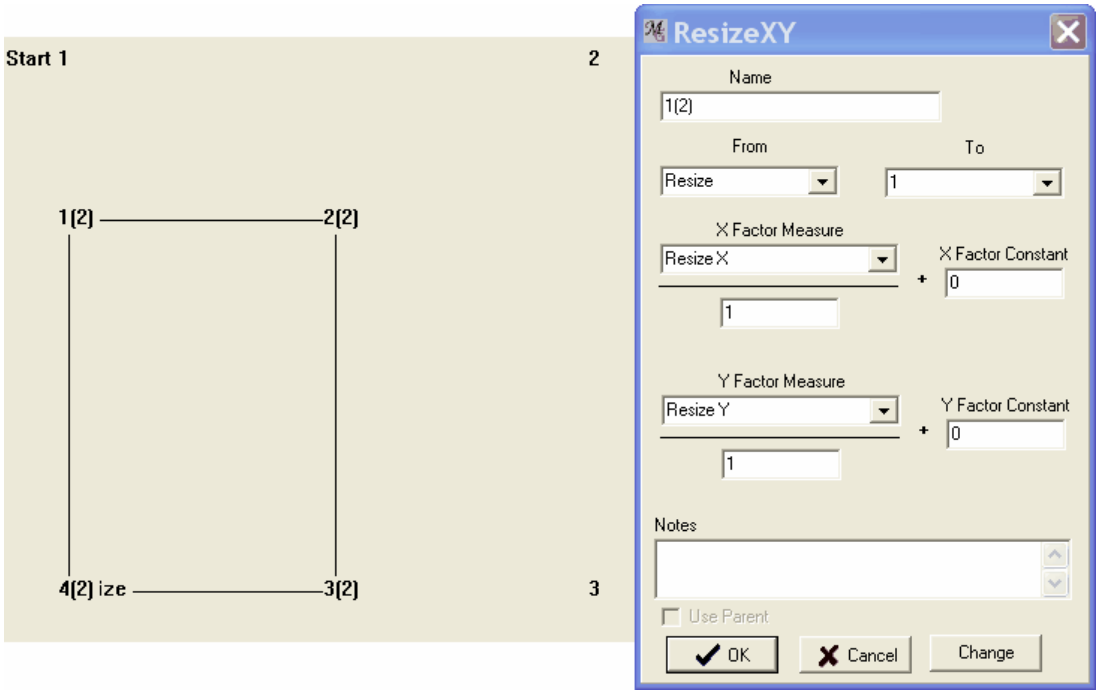
Resize in PatternMaker:
A ResizeXY point is the result of multiplying a point's distance from a given "center" point by a scaling factor, as in the PatternMaker Resize function.
After a Resize command with Editing in PatternMaker, the object is also Resized in MacroGen 4. This action creates several new Resize points and measurements depending how you did the Scaling in PatternMaker

Resize from the left down corner point (P) (default):
Create a new resize point in the point list for every resized point. The new point name gets a (2) extension.
A new point called "Resize" is also created.
This point is created a specific distance from the Start point.
Two new math measures called "Resize X and Resize Y" are created with the value of the scaling factor in the constant field.

Resize from the center point (C):
Creates new resize points for every resized point, with the (1) extension.
No "Resize "point is created because you defined the Resize point from the center and that is a certain point.
Two new math measures are created called "Resize X and Resize Y" with the value of the resizing factor in the constant fields.

You can edit and rename these new points and measurements in MacroGen.

Note:
Math measurements can be changed to Prompted measurements when you want the user to specify the amount of resizing in the X and Y directions for this specific item.



Resize in MacroGen:

Procedure: Tab Panel -> Point->Add.->ResizeXY

Name : Type the name of the new Resize point

Center : Point. The scaling expansion is measured from this point. For instance, if the X scaling factor is 2 and the Y scaling factor is 0.5, then the new point is moved 2 times as far in the X coordinate and 1/2 as far in the Y coordinate from this point as the Point to Resize.

Point to Resize : Point. The point that is to be moved.

X Factor Measure, Y Factor Measure : Measures for the scaling factor See Add Points 86 for a description of the equation format.
Normally, select (None) and only use the Offset field on the right (see below).

Use Parent, OK, Cancel, Change: *See* Add Points 86

See also : Edit Macro 22

7.3.13.6Scale

The Scale point and ResizeXY 105 point are very similar. Just as with the PatternMaker Scale and Resize functions, the difference is that Scale uses a single scaling factor, while Resize uses two different factors for the X and Y coordinates.

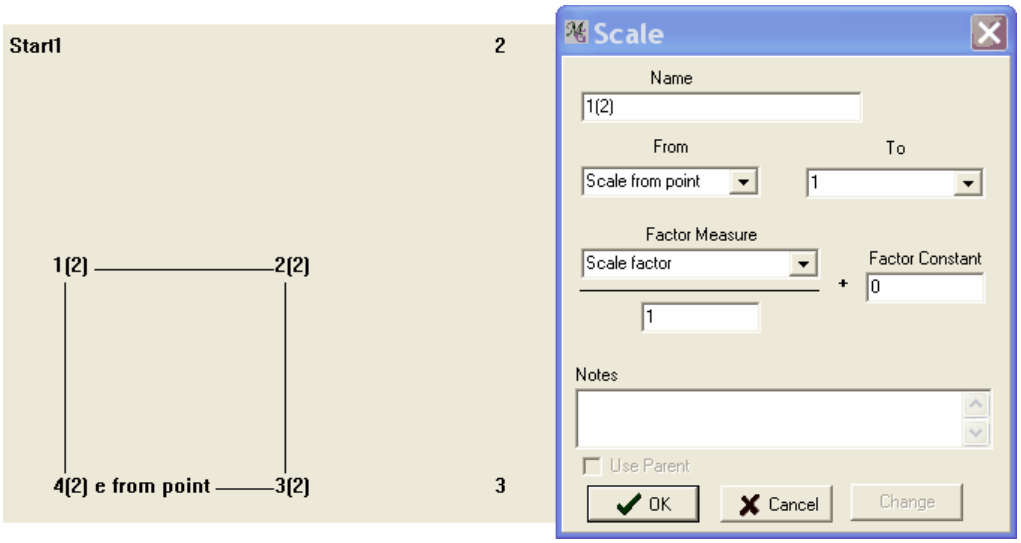
Scale in PatternMaker:
A Scale point is the result of multiplying a point's distance from a given "center" point by a scaling factor, as in the PatternMaker Scale function.
After a Scale command with Editing in PatternMaker, the object is also scaled in MacroGen 4. This action create several new points and measurements depending how you did the Scaling in PatternMaker.

Scaling from the left down corner point (P) (default):
Create new scale points in the point list for every scaled point, the point name gets a (2) extension.
Also a point called "Scale" (renamed in Scale from point) is created.
This point is a specific distance from the Start point.
A new math measure called "Scale" is created (renamed in Scale factor) with the value of the scaling factor in the constant field.

Scaling from the center point (C):
Creates a new scale point for every existing scaled point, with the extension (2).
A "Scale" point is created because you defined the scaling point from the center and that is a certain point.
Also a new math measure is created called "Scale" with the value of the scaling factor in the constant field.

You can edit and rename these new points and measurements in MacroGen.

Note:
The Math Measurements can be changed to Prompted measurements when you want the user to specify the amount of Scaling for this specific item.



Scale in MacroGen:

Procedure: Tab Panel -> Point->Add.->Scale

Name : Type the name of the new Scale point

From : Point. The scaling expansion is measured from this point. For instance, if the scaling factor is 2, then the new point is 2 times as far (in the same direction) from this point as the Point to Scale.

To : Point. The point that is to be moved.

Factor Measure : Measure for the scaling factor See Add Points 86 for a description of the equation format. Normally, select (None) and only use the Offset field on the right (see below).

Use Parent, OK, Cancel, Change: *See* Add Points 86

See also : Edit Macro 22

7.3.13.7 Move

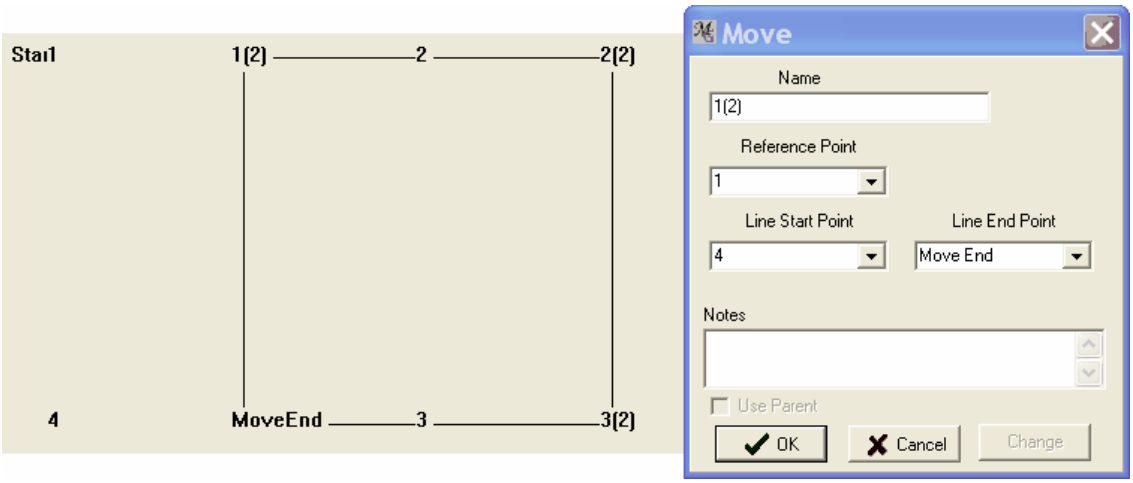
Move in PatternMaker:
A Move point is the result of moving a point or an amount given by the distance between two other points, as in the PatternMaker Move function.
After a move command with Editing in PatternMaker, the object is also moved in MacroGen 4. This action creates several new points depending upon which snap point you used during the movement in PatternMaker.

Move with no Snap function:
Create new points in the point list for every moved point, the point name gets a (2) extension.
But also a **Move Start** and a **Move End** point will be created.
Both are from the Start point.

Note:
It is generally best to use the snap function to move an object!

Move with using the Snap End Point function:
Creates new points for every moved point, with the (2) extension.

Only creates a single **Move End** point.
The Move End point is from the point selected with Snap Endpoint
There is no Move Start because you define the Start point with Snap Endpoint.



You can edit and rename these new points in MacroGen.

Move in MacroGen:
You can also move one or more points directly in MacroGen 4.5

Procedure: Tab Panel -> Point->Add ->Move

Name : Type the name of the new Move point

Reference : Point. The point where the move begins

Line Start, Line End : Points. The points that specify the distance and direction to move.

Use Parent, OK, Cancel, Change: *See* Add Points 86

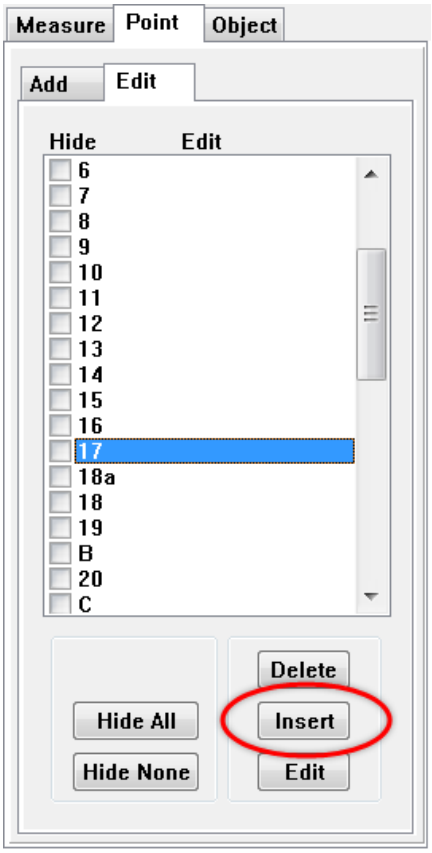
See also : Edit Macro 22

7.4 Insert Point

Although normally you would Add a point and it would appear at the bottom of the list, sometimes you want to Insert a point earlier in your point list.

Procedure: Tab Panel ->Point ->Edit

- Highlight the specific point that you want to insert after
- Click on Insert, a dialog box appears and asks what kind of point type you want to insert. Choose one point type from the list.
- Fill in the point dialog box as usual
- Click OK
- In the list the new point is inserted after the selected point and is not added to the bottom



7.5 Edit Points

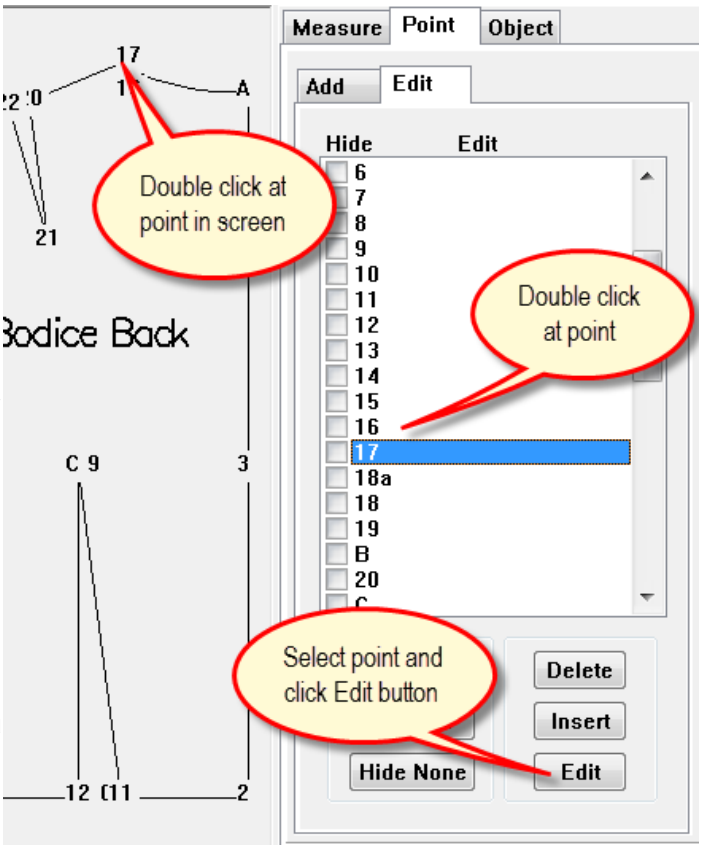
Purpose:
Make changes to a point that was previously entered

You can make changes to the name or value fields of a point at any time. When you click on the Tab Points/Edit or on the menu bar, you will see a window containing a list of available points.
Select the point you want to edit and click the "Edit" button
or you can double-click on the point name in the list.
Another way to select a point to edit is to click on the point in the drawing itself.

Next you will see a dialog box with exactly the same fields created when the point was added. Click in any field that you want to change and make the necessary modifications. You can change the name of the point here, as well as any information about its reference to another point.

You also have the option to change the point type by clicking the "Change" button.

When you are finished, click the "OK" button to return to the drawing screen. If you have a point in your drawing whose position is determined by the point you just edited, it will be moved to reflect the changes.



For more information about changing points in a child and not in a parent style
See Use parent 113

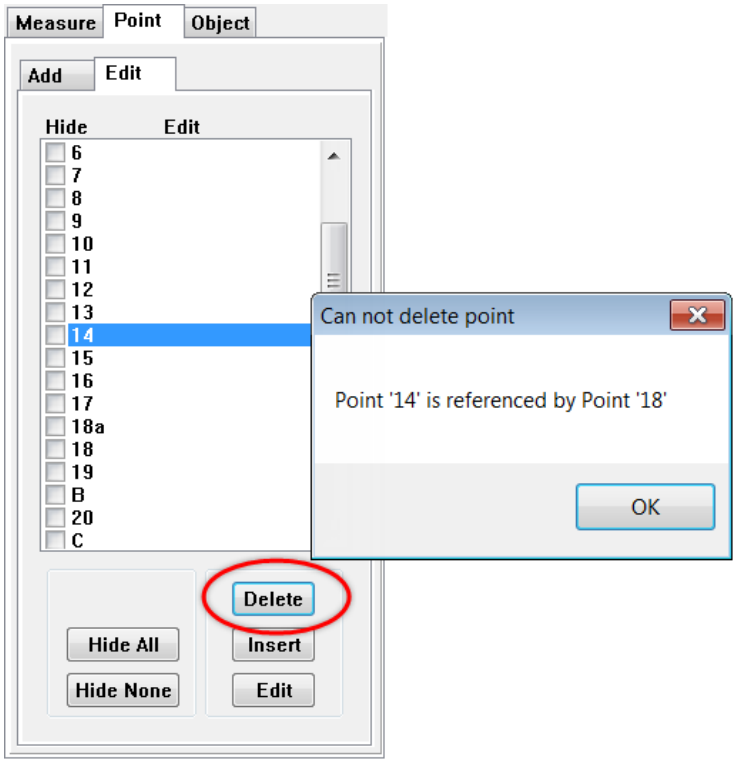
7.6 Delete point

Purpose:
Delete a point that was previously entered

Procedure: Tab Panel ->Point -> Edit ->

You will see a list of the points that have been entered. Click on an item in the list, and then click the Delete button. You will then be returned to the drawing window.

Note:
If the point you want to delete is used by another point, measurement or object you will get a message box advising you of this, and the Delete action will be canceled.
You can not delete a point from which other points, measurements or objects are dependent.



7.7 Purge points

Purpose:
To clean up the unused points.

Procedure : Menu -> Points -> Purge Unused

All unused points will be deleted, except those are used in a object or have references to other points.

It would be good practice to save your work before you run this command.

Take care, this command can not be undone!

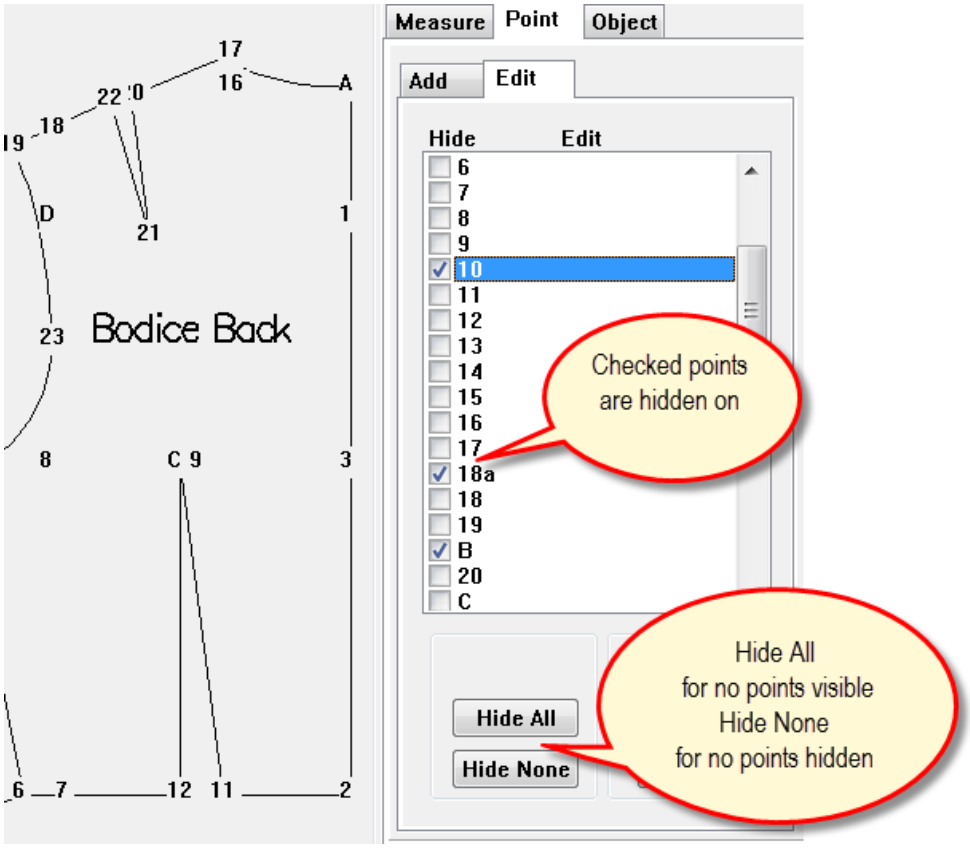
7.8 Show/hide points

Purpose:
Select which points in the drawing will be visible

If you have a large number of points in your drawing, you may want to hide some of them temporarily.

Procedure: Tab Panel -> Points -> Edit

- All points are visible in the list
- Check the check-box **Hide** for any point you want to hide in the drawing
- When you want don't want to see any points, click the button "**Hide All**"
- When you want to see all the points again click the button "**Hide None**"



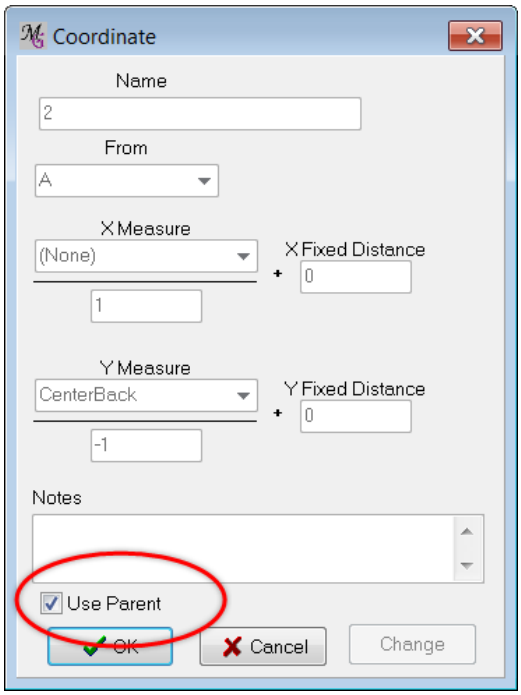
7.9 Use Parent

The "Use Parent" check-box in a points form selects whether or not this point takes its definition from the parent of the current style in the Style Tree 26. If it is checked, all of the other fields in the dialog are disabled (grayed out).

Initially, all child "Use Parent" check-boxes are checked. This means that the child inherits the characteristics of the parent. When you uncheck the "Use Parent" box, the child can be different then the parent.

Moving certain points to different places is one of the key tools for making one style different from another. To change a point, uncheck the box and change the formula that defines it. For those points that do not change from style to style, leave the "Use Parent" check-box checked.

Whenever you create a point in a style, the point becomes defined in all that style's child styles (see Style Tree 26). The "Use Parent" checkbox is unchecked by default in the parent style, but it is checked in all child styles.



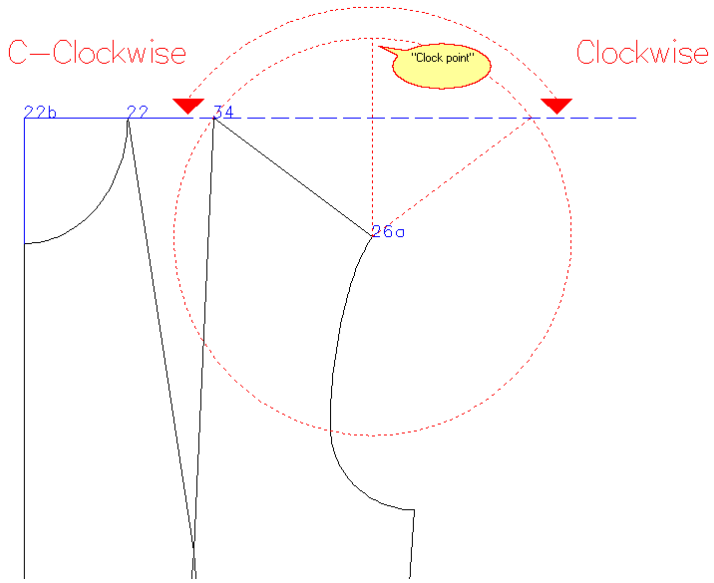
Notes:

- *To make one style different from another, change point definitions in the Style Tree. Uncheck the "Use Parent" check-box for those points that must be moved, and redefine those points.*
- *Define each point as high up in the Style Tree as possible so that you do not need to redefine it over and over for multiple styles.*

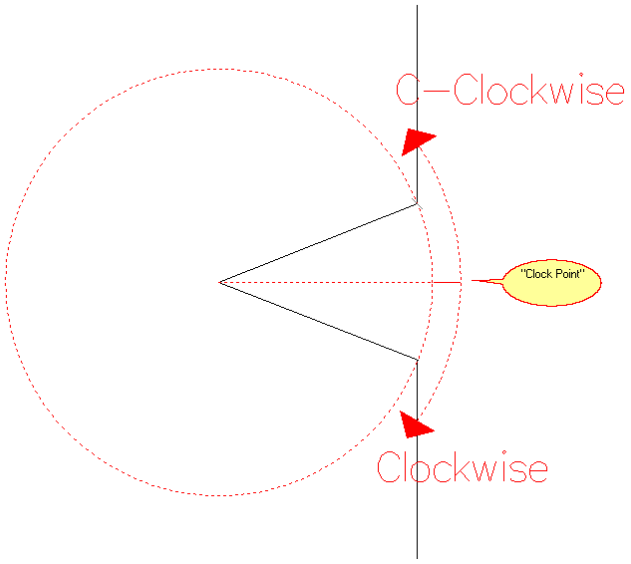
7.10 C-Clockwise

In some point forms there will be a check-box with C-Clockwise.
This means you can choose if the point goes Clockwise from the "Clock point"
or Counter Clockwise from the "Clock point".

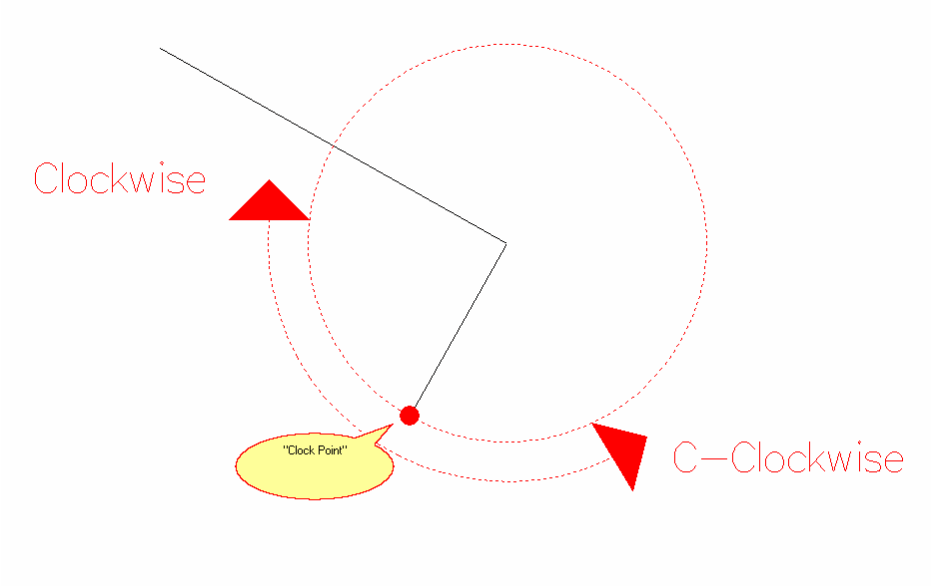
- Line Distance point



- Dart point



- Right Angle point



Part 8

8 Working with Objects

An object is an element of a pattern that is actually drawn with virtual lines. For example, a sleeve is an object, a bodice front is an object, and so is a grain line or text. Objects in MacroGen correspond directly to objects in PatternMaker. That is, each MacroGen object generates lines in the macro to create an object, set its type and other attributes, and add a list of points to the object. The process of "drawing" an object in MacroGen is actually the process of adding points to its point list. MacroGen supports three of the four types of objects in PatternMaker: poly, text, and dimension (but not insertion objects like symbols) objects.

To create an object (poly objects):

Procedure: Pattern Display-> Tab Panel-> Object ->Add ->New*

- **Object Name:** Enter a name for the new object (mandatory)
- **Group:** Enter or choose a group to add objects into (optional)
- **Closed:** Check this box to make the object closed (see PatternMaker manual).
- **Add points:** Add points to the object by clicking on them in the Pattern Area. Adding points to MacroGen objects can only be done by clicking on them. There is no non-graphical way. This means points must be visible to be able to select them. An object's points are listed in order, in the list box.

There are five steps in the process of creating a MacroGen object:
1. Select the style(s) the object is part of.
2. Open the Object Tab
3. Define a new object.
4. Add points to the object's point list.
5. Edit the point connection list, for instance to recreate curves.

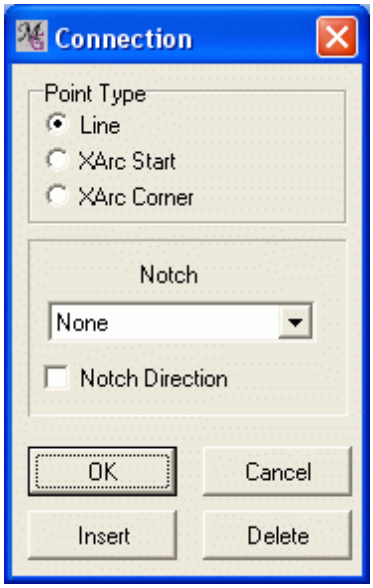
**Note: The object list display is not modal, so that its appearance when an activity is in progress is very similar to the way it looks when ready to start a new action. A prompt "Click New" appears when MacroGen is ready to start a new object. If this prompt is not visible, complete or cancel the current activity ("OK" or "Cancel" buttons).*

Creating Objects and Styles
An object in MacroGen exists in the style it is created in, and in any styles that are children of that style in the Style tree. To create an object that exists in several related style branches, select the style on the correct intermediate branch. Objects that exist in all style branches should be created in the root of the Style Tree.

Points and objects both "inherit" properties from higher branches in the Style tree, but they do so in different ways. Points are always defined in every style, even if they are not used. For points, there is a "Use Parent" check-box. If this is checked, the point uses the same definition as the parent style's point; otherwise, the point may be different.

Each object, on the other hand, exists only in the style branch and sub-branches for which it is defined. An object is the same in all styles that it exists in; in the sense that it has the same name, point list, and other attributes. But the object may look different from one style to another if the points it uses are changed.

Connection dialog
The Connection dialog sets parameters of a point within an object. From the Object tab, double-click on any point in the list box on the right to open the Connection dialog:



The default point type is Line. To create an arc, select "Xarc Start" or "Xarc Corner". MacroGen automatically changes the adjacent point to the right type (recall that in PatternMaker, an Xarc start must always be followed by a corner point); however, it is possible to create an invalid point list by repeated use of the Connection dialog.

Notch: for notch marks (see PatternMaker manual), set notch type and direction.

OK, Cancel : Accept these changes, or cancel and do not make changes.

Delete : Remove this point from the object point list. Does not remove the point from MacroGen project

Insert : Set insertion location for future points. Subsequent points added to object (by clicking on them) are added after this point, rather than at end of the object point list.

Edit tab:

Hide objects from the Piece display by checking the Hide box next to the object's name. This affects only the display, has no effect on the resulting macro.

Hide All : Checks all boxes
Hide None : Unchecks all boxes.
Edit : Brings up the Add tab for currently selected object. Highlight an object by clicking its name in the list box. The Add tab contains editing functions (see above).

See also:

Add Objects 120
Edit Objects 122
Delete Objects 124
Show/Hide Objects 125
Dim Objects 127
Text Objects 129
Grouping Objects 132
Add Notches 133

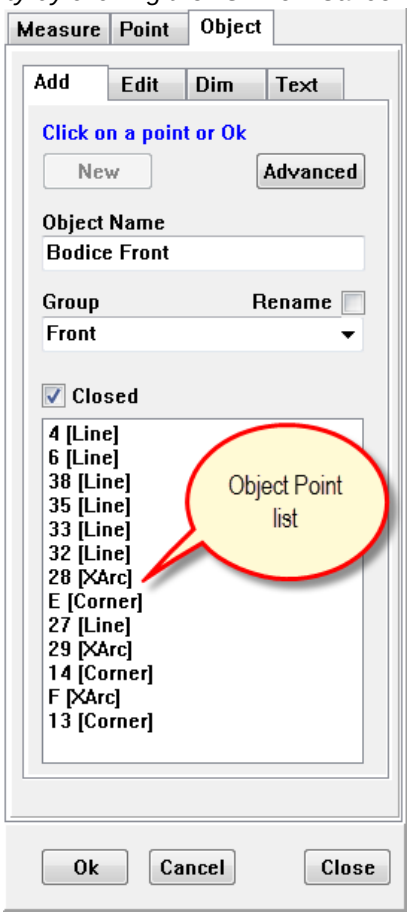
8.1 Add Objects

Use the **Add** sub tab to create poly objects. To work with Text and Dim objects, see Text objects 129 or Dim Objects 127.

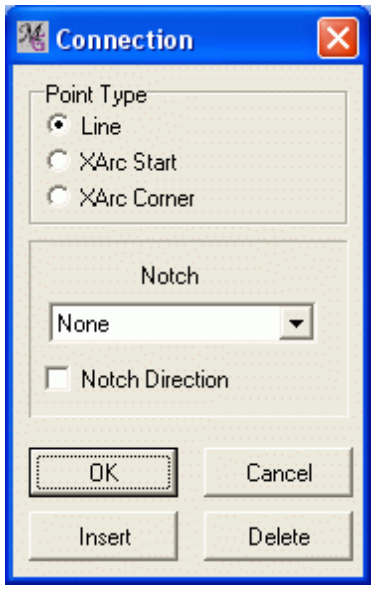
- Select a style, or open the Pattern Display 42 for that style.

- **Procedure: Tab Panel -> Objects -> Add -> New**

  Note: The text 'Click "New"' shows in blue letters at the top of the dialog when the New button is active. If it is not, end the current activity by clicking the "OK" or "Cancel" buttons.



- Enter a name for the new object (ie. "Bodice Front" or "Sleeve").
  During the object creation process, the text 'Click on a point or OK' shows in blue letters at the top of the dialog. The name is the identification of the object. Changing the name of the object in a child will also change the name in all children and parent.
- Create or choose a group from the pull-down box.
- Left-click on a point in the pattern view. The point is added to the object's point list.
- Repeat for every point that you want to use to form your object
- To change the point's connection type (line, arc, etc), right-click on the point to bring up the Connection dialog.



- Check the point type you want. The point will be added to the list on the right. If you select Xarc Start, the next, subsequent point will automatically be made an Xarc corner, and so forth.
- Repeat step 3 to add more points. The points are listed in the list box on the right in the order in which they were added.
- When you are finished adding points, check the "closed" radio button to close the object. When you leave it unchecked then the object will be an open object.
- When you are finished adding points, click the "OK" or "Cancel" button.
- When you are finished working on the Points, Measure or Object Tabs and you want to return to the Style Tree you have to select the Close button.

Editing objects

The above functions, as well as those listed below, are also used to edit existing objects. Since the display is the same, look for the blue text 'Click on a point or OK' to be sure you are not trying to create a new object. See Edit objects 122 for a description of how to select an object for editing.

Curves and notch points

Polygon arcs and notch points have the same properties in MacroGen that they do in PatternMaker. See the PatternMaker manual for details on Xarc Start and Xarc Corner points

Note:

You cannot place Xarc corner points "by eye" as suggested in the PatternMaker manual. It is up to the MacroGen programmer to make appropriate point calculations to place corner points.

Insert button

The Insert button (see Connection dialog box above) is for changing the point order within an object. Click the Insert button to make the selected point the insertion point for new points. i.e. any points added to the object come after this point in the point list, rather than at the end. **Re-ordering points:** You cannot rearrange the order of points once added to an object. Instead, delete the point(s) from the list (see below), select an insertion point, and re-add them.

Delete button

The Delete button removes the selected point from the object point list. It does not delete the point's definition from MacroGen.

See also : Edit Objects 122
: Delete Objects 124
: Show/Hide Objects 125
: Dim Objects 127
: Text Objects 129
: Grouping Objects 132
: Add Notches 133

8.2 Edit Objects

The Edit sub tab displays the object list for the current style. You can delete objects, select objects for editing, and toggle the display of objects on/off. You also can open an object from the list to view it or edit it.
Note: turning off the display of an object in the piece view has no effect on the creation of that object in the final macro.

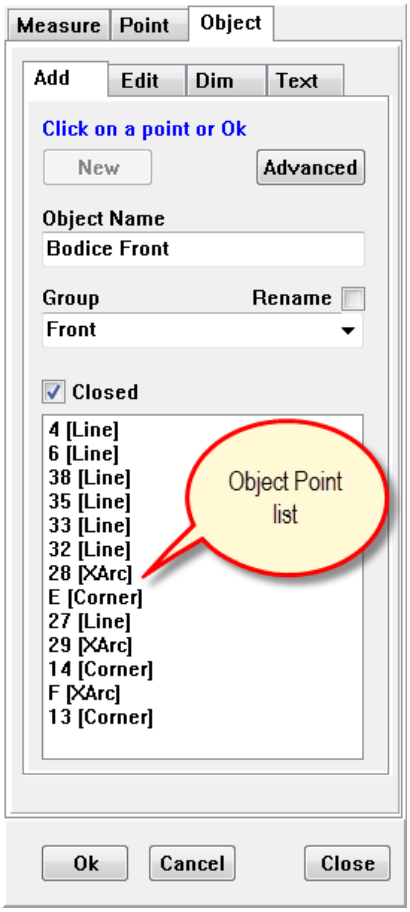
Note: actual object editing takes place in the Add, Text, and Dimension sub tabs. The Edit tab is used to edit the object LIST and to access the various edit functions, but not to edit objects themselves.

Procedure: Tab Panel -> Object -> Edit -> Select object -> Edit

By clicking the Edit button you can open the selected object. You can also double-click at the object in the list and it will open.
You will see all the connection points for that object.
You can change the name, change point types, add/delete notches, insert new points to the object or delete existing points from the object.

After opening an object, the form has always to be closed by clicking OK or Cancel.
When this is forgotten and another tab is selected before clicking OK or Cancel a message will show up that the object form needs to be closed by OK or Cancel.

Objectlist for the current Style



Connections for the bodice front in the point list

It is really important that you select the right button, OK or Cancel
If you did not change anything to the object(you just wanted to see the points in the object) select always Cancel, because otherwise the objects in the children could be reset to the parent.
If you have already children in this style, changes in an object of the parent will affect the object in the children.
A change in an object could give unwanted changes in a child, therefore MacroGen will give a choice in the changes that should be made to the children.
Clicking the OK button(saving the drawn object) when there are children will show a message popping which says:

What do You want?
Yes - all children are reset to the changed parent
No - the children stay unchanged, changes are made only to the parent
(you may also want to make the change in the children)
Cancel - the change in the parent is cancelled

Note:
Selecting the right button is very important for the object in the children.
If you select Yes, all objects are reset to the parent, this means all made changes to the children are lost.
If you select No, only the parent object is changed. The objects in the children stay the way they were.
This means that you have to figure out which answer is the most efficient answer. If you have made many changes to the object in a child selecting No could mean less work. You have to make the last changes also to the children.

To show or hide objects:

Check the box next to an object's name to hide the object in the piece display.
You can hide all objects of a particular type by checking a box under "**Hide Object Type**".
Use **Hide All** or **Hide None** buttons to check or uncheck all boxes at once.
Note: the object list does not indicate object type, so the various "Hide Object Type" boxes are the only way to search for objects of type Text or Dimension.

See also
: Add Objects 120
: Delete Objects 124
: Show/Hide Objects 125
: Dim Objects 127
: Text Objects 129
: Grouping Objects 132
: Add Notches 133

8.3 Delete Objects

Allows the user to Delete objects.

Procedure: Tab Panel -> Object -> Select object ->Delete Object

Select the object you want to delete and click on the delete object button.

Note:
You can not undo this command so think before you delete!
It is always a good idea to save your work before a big deletion.

Note:
When you delete an object you don't delete the points!

See also
: Add Objects 120
: Edit Objects 122
: Show/Hide Objects 125
: Dim Objects 127
: Text Objects 129
: Grouping Objects 132
: Add Notches 133

8.4 Show/Hide Objects

Show/hide is used for showing objects or hiding them

There are different ways to show or hide objects.

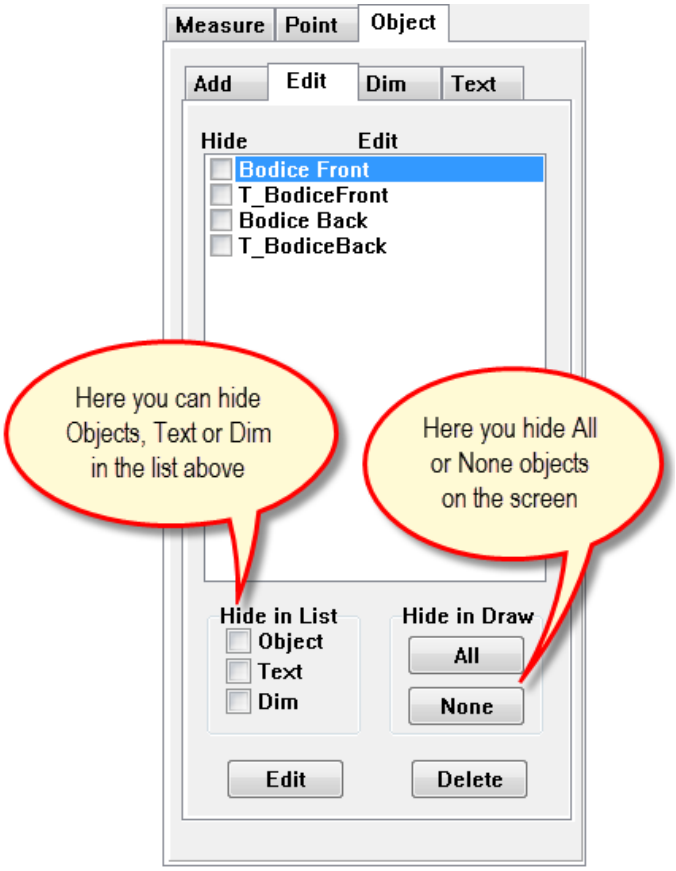
Procedure: Tab Panel -> Object -> Edit

Hide checkbox in list
Check the object you want to hide on the screen

Hide in Draw :
All : Hide all objects in the pattern display for the current style
None : Show all objects in the patterns display for the current style

Hide in List
You can make a selection of the object type you want to show/hide in the list.
Check the object type that you don't want to see

- Object
- Text
- Dim

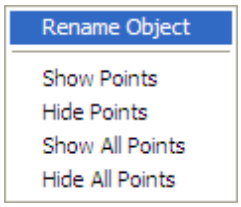


Note:
When you hide an object in MacroGen the object is seen in PatternMaker when you test it!
So when you use temporary object(s) delete those when you are ready to release your macro.

See also : Add Objects 120
: Edit Objects 122
: Delete Objects 124
: Dim Objects 127
: Text Objects 129
: Grouping Objects 132
: Add Notches 133

8.5 Showing/Hiding Points

Sometimes it is helpful to see the points used by an object. If you right click on an object the following context menu appears:



The options are as follows:

Rename Object
- Renames the object

Show Points
- Displays the points used in the object

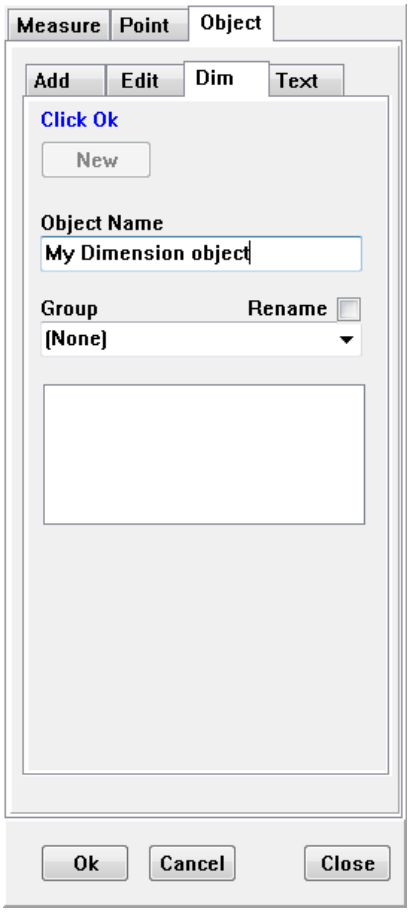
Hide Points
- Hides the points used in the object

Show All Points
- Shows All points in the style

Hide All Points
- Hides All points in the style
-

8.6 Dim Objects

Use the **Dimension tab** to create and edit dimension objects.
A dimension object in MacroGen creates a dimension object in PatternMaker. A dimension object has the same attributes as a PatternMaker dimension object: a name, two end points, and an insertion point.



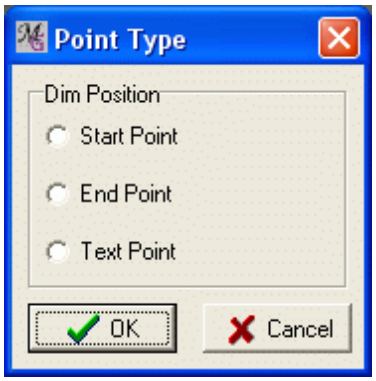
Replace picture with dim points + example

Procedure: Tab Panel -> Object -> Sub Tab Dimension -> New

- **Name** field: Enter an object name for the new text object**. Required.**
- Click on **three** points in the Pattern Area. See PatternMaker manual for a description of the three points of a Dimension object. You will not see anything happen until all three points are selected; then the object appears in the Pattern Area.

To edit a dimension object:
- Editing dimension objects is similar to editing poly or text objects Text objects 129.
  Select the object and open the Dimension sub tab for the selected object.

To change a dimension object's point list:
- Click a **new** point in the Pattern Area. A dialog box lets you choose which of the dimension object's three points this will be:



Select one. The selected point replaces the object's current start, end, or text insertion point.

- Exit the Edit function by clicking either the **OK** or **Cancel** buttons.

Tip:
When you want the text lower or higher then the text point you can add an offset to it.
Click on the 3th point in the edit list (text insertion point) an offset dialog appears

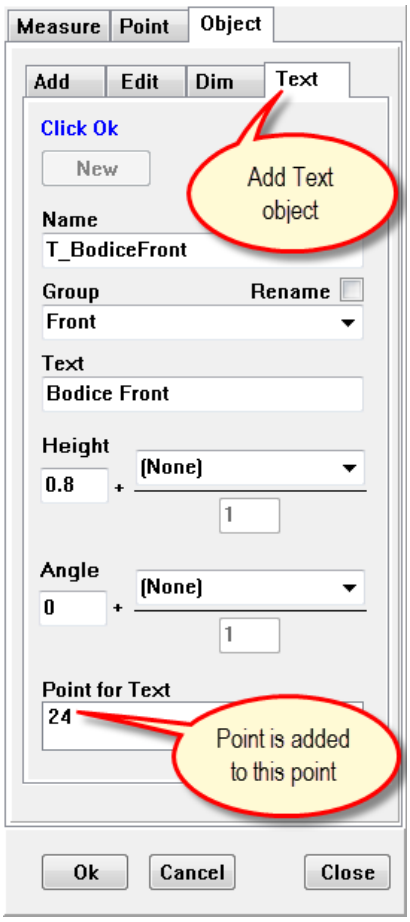
Type the offset into fixed fields and click OK

Note:
*Certain functions, such as the Object pull-down menu functions, are disabled during editing. If a function you want is disabled, click the **Cancel button** and start over.*

See also
: Add Objects 120
: Edit Objects 122
: Delete Objects 124
: Show/Hide Objects 125
: Text Objects 129
: Grouping Objects 132
: Add Notches 133

8.7 Text Objects

Use the Text tab to **create** and **edit Text objects**.
A text object in MacroGen creates a text object in PatternMaker. A text object has the same attributes as a PatternMaker text object: name, text, insertion point, size, and angle. In addition, it has an X and Y offset from the insertion point.



To create a text object

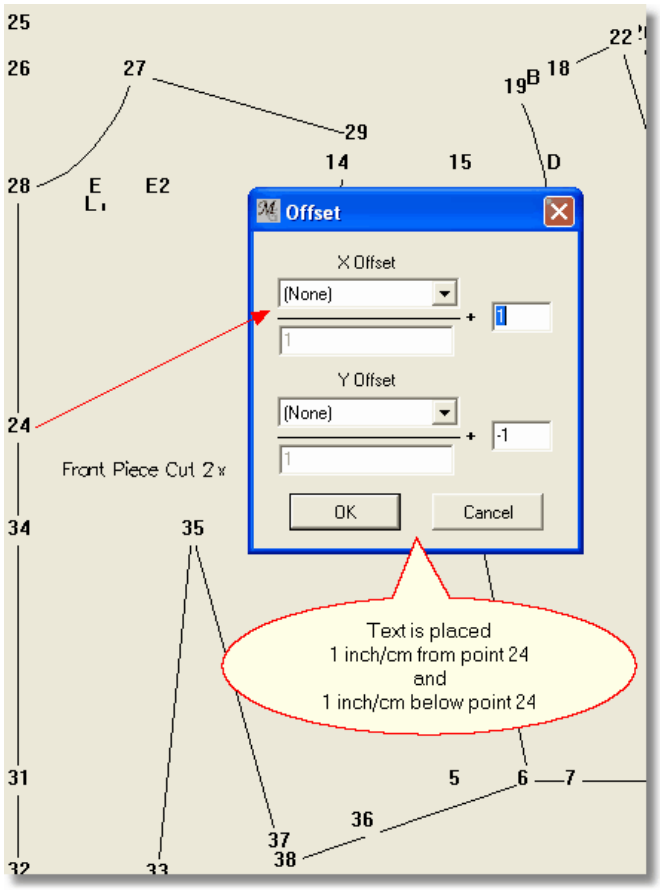
Procedure: Tab Panel ->Object -> Sub Tab Text

- **Name** : Enter an object name for the new text object. **Required.**
  It could be handy to type before the name a character which means to you "it is an text object".
- **Group** : Select from the pull down list a group the text belongs to.
- **Text** : Type in the text that the user sees on the pattern

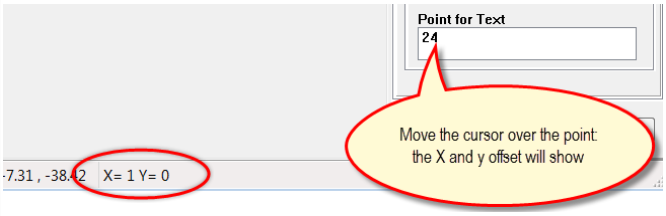
  (Punctuation characters and new line characters are not allowed; each text object displays on a single line.)
- **Height** : Type in the height of text or/plus choose a height measurement from the pull down list.
  You can make a height measurement so that you have a text height that is consistent for a specific measure.
- **Angle** : Type in the angle of the text. (0 = horizontal 90 = vertical) or/plus choose an Angle measure from the pull down list
  Make a angle measure (see angle measure) 61

The text is now placed exactly in line with the angle of the line.

- **Point for text**: Click a point in the Pattern Area. The insertion point of the text is based on this point, plus an extra offset.
- The Offset dialog appears:



Enter offsets in the X and Y directions.
The actual text insertion location is offset from the selected point by the indicated amounts. The syntax is the same as in the various Point type dialog boxes (see Coordinate 88); however, this dialog does NOT create a new MacroGen point.



When the point for text has been filled in you will see in the Status bar the X and Y offset. Also moving the cursor over the text point will show the X and y offset as a hint.

Note:
In MacroGen 3 you had to add a special text point but in MacroGen 4 you can use the offset box to place the text on an existing point. It creates a blue insertion point in PatternMaker.

To edit a text object:
To edit a text object, first select it by name, then edit it in the Text sub tab of the Object tab. There are two paths to this function.

1. From the Tab Panel:

- **Tab Panel->Object ->Edit**
- Check **Hide Object Type/Object** and **Hide Object Type/Dim.**

The remaining listed objects are the text objects.
Select the desired object by name. **Double-click** the text object to edit, or highlight it and click **Edit** button. Either of the above methods makes the **Text sub tab active**. Change whatever properties of the object you desire.

2. From the Object pull-down menu:

- **Menu -> Object->Edit Object** A list of all objects in the MacroGen project appears.

- Select the desired object by name.
- Double-click or click **OK**.

Note:
*The Text sub tab is used both to create and edit Text objects, and its appearance is very similar in both cases. The prompt "***Click Ok***" appears when you are editing. If it does not appear, click the* **Cancel** *button and start over.*

- Exit the Edit function by clicking either the **OK** or **Cancel** buttons.

Note:
Certain functions, such as the Object pull-down menu functions, are disabled during editing. If a function you want is disabled, click the ***Cancel button*** *and start over.*

After a text object is created, you can treat it just like any other object. It can be deleted, and it can be temporarily hidden.

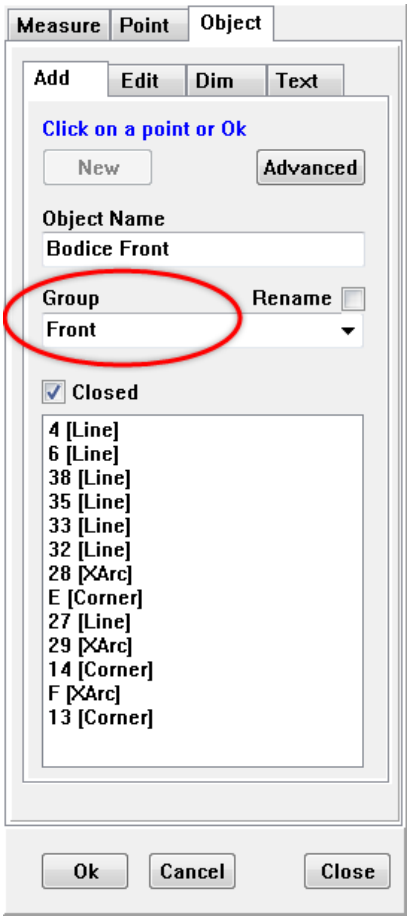
See also
: Add Objects 120
: Edit Objects 122
: Delete Objects 124
: Show/Hide Objects 125
: Dim Objects 127
: Grouping Objects 132
: Add Notches 133

8.8 Grouping Objects

Objects can be grouped together in MacroGen just as in PatternMaker.
The Group field is found in the edit windows for all three object types: Poly, Text, and Dim. To create a group, type in a new group name in the main object (no text or dim objects) of that group. To add an object to an existing group, use the pull-down list under the "Group" caption.

Procedure: Tab Panel -> Object -> Edit ->

1. Double-click on the object that should get a group name.
2. Enter a group name in the Group field in the object's Add sub tab.



You can rename a group by checking the Rename box then changing the group field. Otherwise entering a new value in Group creates a new group.

Note:
It is recommend that you create a group immediately when you create the main object!
(i.e. front piece)

Groups and Auto Arrange 154

Group all objects that should stay together for the Auto Arrange function into a single group. In general, the piece representing the piece outline is marked for Auto Arrange (ensuring that no other pieces overlap it), and associated objects such as darts, grain lines, and seam allowances should be grouped with it.

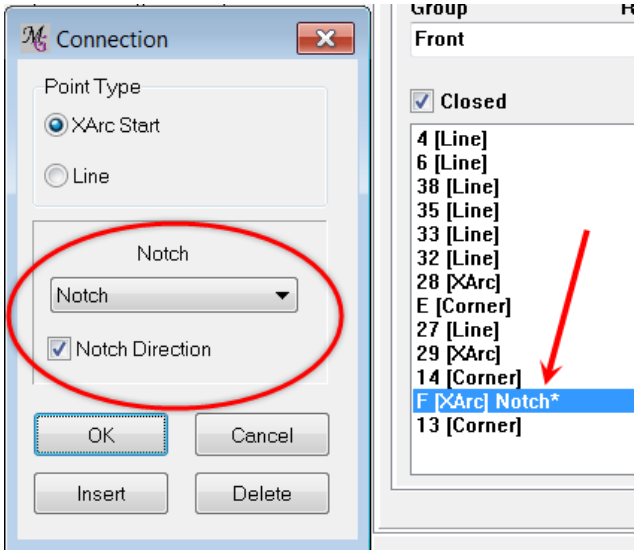
See also:

Add Objects 120

8.9 Add Notches

Notches create notch marks in PatternMaker. Only Line Points of a poly object can be defined as a notch point. If a point of an object is defined as a notch point, it will be drawn as one of several sewing notch marks in PatternMaker. Notch types are set in the Connection dialog of an object's point list

The default notch type is None. Notches have no effect in Text or Dimension objects.



The point gets a mark "Notch"
The * is the notch direction

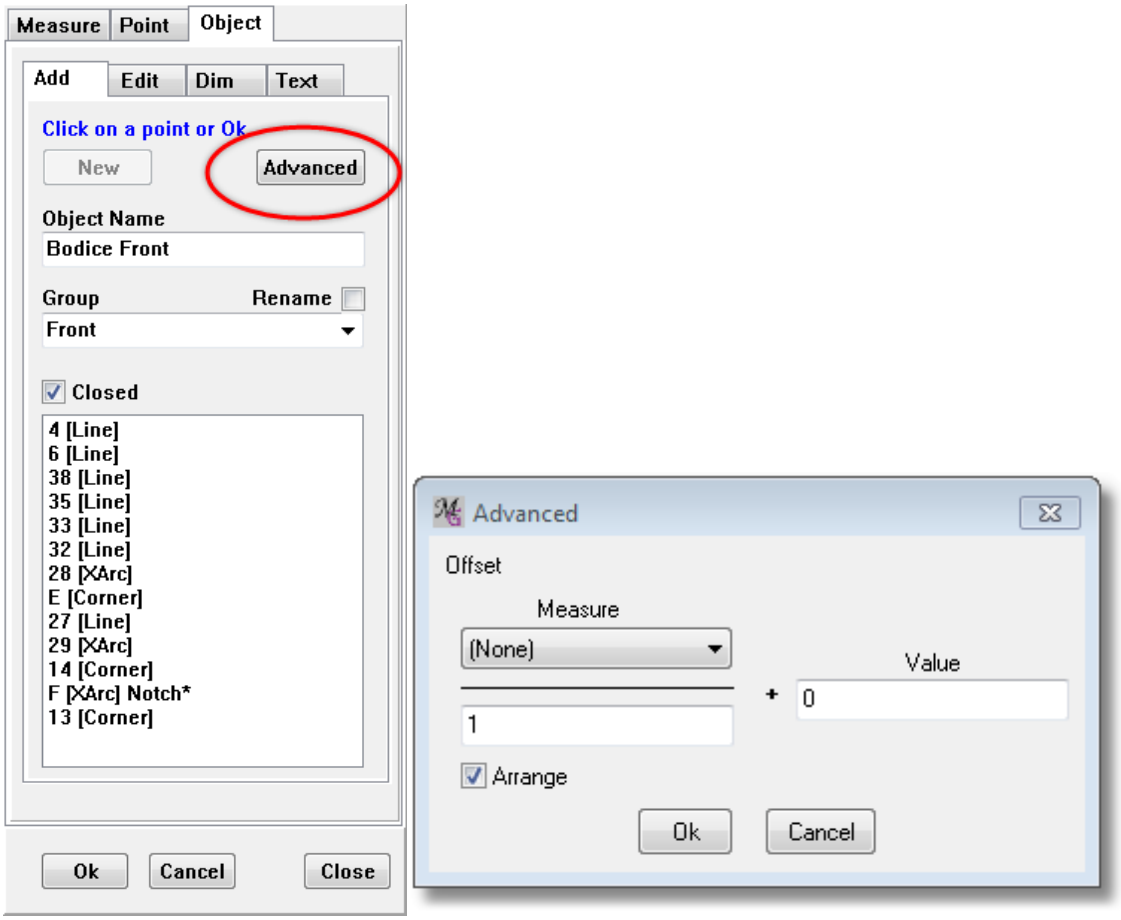
You can change the Notch Direction when it is drawn in the wrong direction.

Note:
It is recommended to create notches at the same time you create the main object (i.e. Front piece)

See also
: Add Objects 120
: Edit Objects 122
: Delete Objects 124
: Show/Hide Objects 125
: Dim Objects 127
: Text Objects 129
: Grouping Objects 132

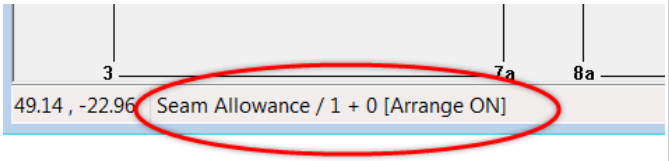
8.10 Advanced tools

The Advanced button in the Object tab opens the Offset dialog, which sets two parameters in the current object: **Offset** and **Arrange**.

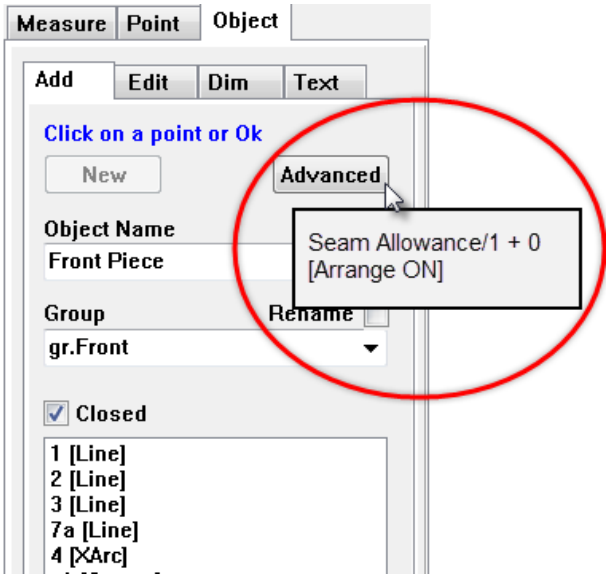


It only works with the command Auto Arrange from the Settings Menu

To have a quick look what is filled in in the Advanced form, go with your mouse over the Advanced button.
It will show the values:
- in the Status bar at the bottom
- with a tool tip to your cursor.



at bottom of screen



See also: Auto Arrange 154

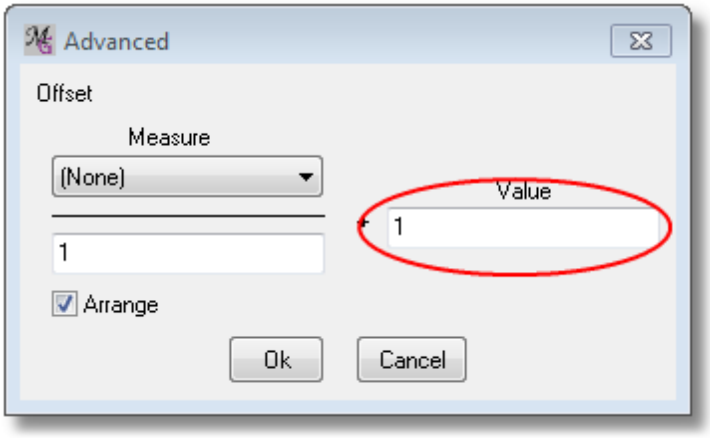
8.10.1 Adding Offset

Offset tells the macro to draw an offset (seam allowance) around the object. There are two ways to add an offset to your objects.

1. Offset with Value:

Procedure:
- Open the object you want to add an offset to
- Click on Advanced. The Advanced form opens.
- Type the number of the desired offset in the value box

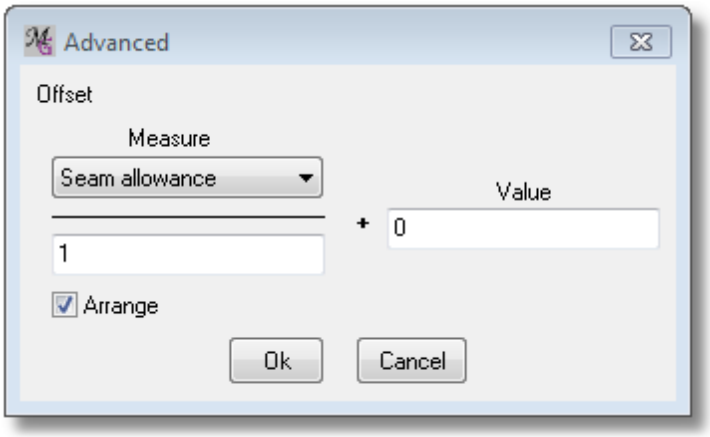
The object will have a fixed offset that the user cannot change. Each object can have a different offset.



2. Offset with measurement:

Procedure:
- Make a new prompted measurement named "Seam allowance" with a desired default value (eg. 0 or 1)
- Open the object you want to add an offset to.
- Click on Advanced. The Advanced form opens.
- Choose the measure "Seam allowance" from the pull down box

The object will have a seam allowances that is given by the user.
The measure "Seam allowance" can be added to the .MMT (Master Measurement Table). All objects with the measure "Seam allowance" will have the same amount of offset.



Note:
The seam allowance is the same around the whole object! Known in PatternMaker as Offset.
It is not possible to create variable seam allowances.

To have a quick look what is filled in in the Advanced form, go with your mouse over the Advanced button.
It will show the values:
- in the Status bar at the bottom
- with a tool tip to your cursor.

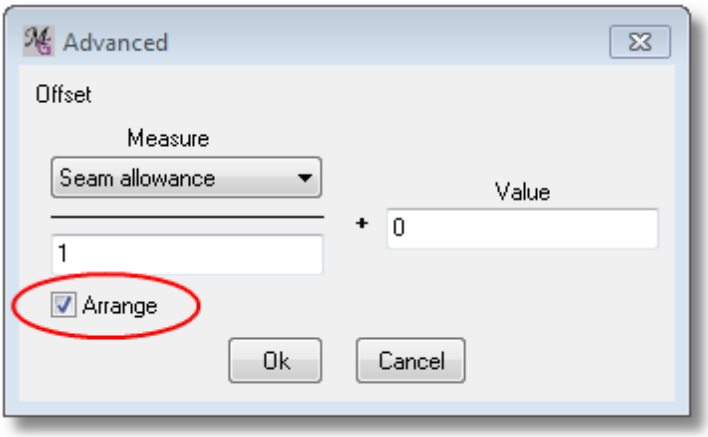
8.10.2 Arrange

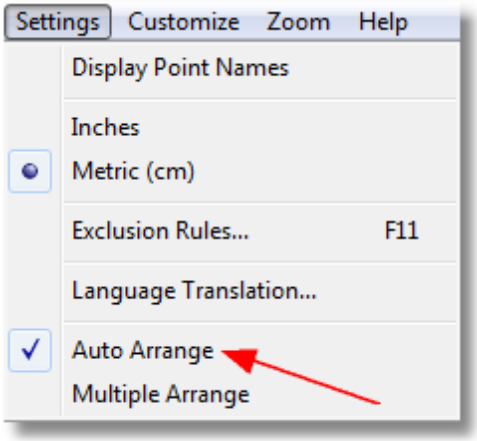
Checking the Arrange box tells the macro that all arranged objects should not overlap each other when they appear in PatternMaker. This means that objects can be moved after drawing it, so that they do not overlap other arranged objects. This is important when a macro has several pieces that use common points and thus overlap when created (depending on the used values) or overlap after using an offset.
It is possible to program the pattern in a way that they do not overlap when drawn in PatternMaker. It is necessary that objects are moved in MacroGen after they are created. This can be done with the "Edit in PM" command, but then many new points need to be added to the project.
Using the Arrange checkbox in an object makes it much easier for the designer to overcome overlapping objects.

Only the main object (the outside pattern) of a group has to be checked as Arrange, the other objects which are part of the group like the grain line, the belonging text objects and darts are not checked as Arrange. They need to be drawn inside the pattern. (*They are overlapping the main object which is good*).

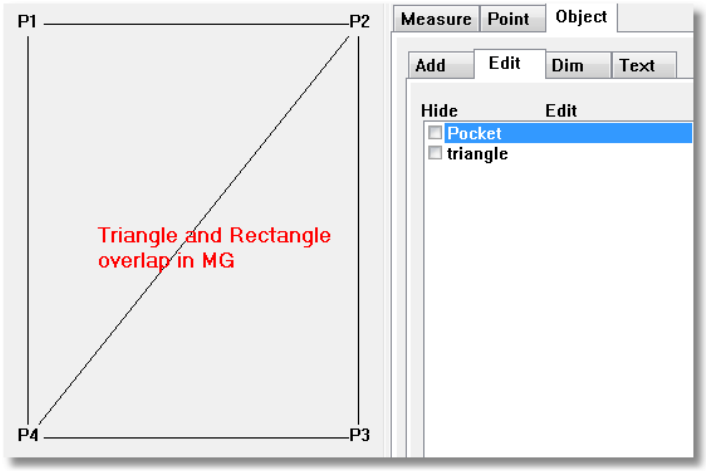
Procedure:

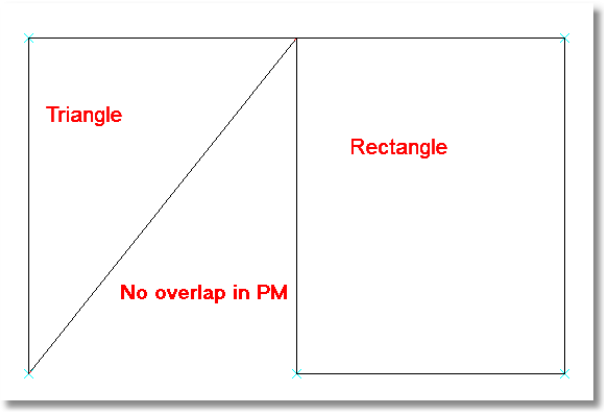
- Open the main object of the group you want to add to check the arrange box
- Click the Advanced button
- The Advanced form opens
- Check the Arrange checkbox
- Repeat this procedure for all main objects
- As an second security for arranging the patterns the Auto Arrange command in the Settings menu needs to be checked.





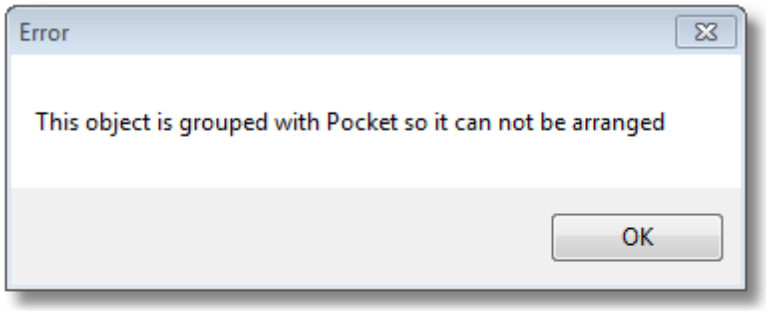
Example
Both objects that are not allowed to overlap in PatternMaker have to be marked with "Arrange" .
In this case two objects Pocket and triangle are created. In MacroGen they are drawn inside each other using the same points. In PatternMaker they need to appear as separate patterns, not overlapping each other. This will occur when in both objects Pocket ***and*** *triangle the arrange box is checked.*





Important:
To have MacroGen arranging the objects that are "checked as Arrange" in PatternMaker the Auto Arrange command in the Settings menu needs to be checked also.
See Auto Arrange 154

It is normally not possible to have the Arrange box checked in more then **one object in one group**. Only the **outside pattern** (the main object) will be checked as "Arrange"; all the other objects belonging to the same group like grain line, text objects and darts will be drawn inside the pattern and eg overlap the pattern.
When you try to check the Arrange command more then once in one group, MacroGen will show a warning message about this.



Checking more then once the Arrange checkbox in one group can otherwise give problems when the patterns appear in PatternMaker (for instance the grain line is also checked as Arrange, this means in PatternMaker it does not want to overlap the main pattern.

It can be necessary to have more then one object marked as Arrange. See for more information: Multiple Arrange 155

To have a quick look what is filled in in the Advanced form, go with your mouse over the Advanced button.
It will show the values:
- in the Status bar at the bottom
- with a tool tip to your cursor.

Part 9

Working with Logic

9 Working with Logic

The Logic window is a worksheet to arrange the logical order of steps in your macro.
You open the Logic window through **Menu -> Point->Logic-**
It is also a tool for adding mathematical calculations, making logical (IF-THEN) decisions, and adding custom programming code in the PatternMaker macro language.
This dialog is the key control for organizing a macro. A MacroGen macro divides into three major parts:

1. Take the user's inputs.
2. Calculate all the measures and points.
3. Create objects from the points.

The **Step window** gives a master view of all of step 2. With it you can:

- Set the order in which points are calculated
- Add mathematical calculations
- Recalculate the values of measures and points
- Add decisions based on measure values; that is, IF blocks
- Make While-loops that repeat over and over
- Add custom code in the PatternMaker programming language.
  (For advanced use only; custom code requires that the programmer already know the PatternMaker language.)

Notes:
- *The usual result of any mathematical calculation is a measure. Any measure, prompted or calculated, can be changed by a step in the Step window. The values they start with are not set in stone! For programmers, a Measure in MacroGen is the same as a "variable" in a standard programming language.*
- *It is possible to make a macro, even a complex one, without using the Step window if the point calculations, and the order they come in, are straightforward. By default, points and measures are calculated in the same order in which you define them.*

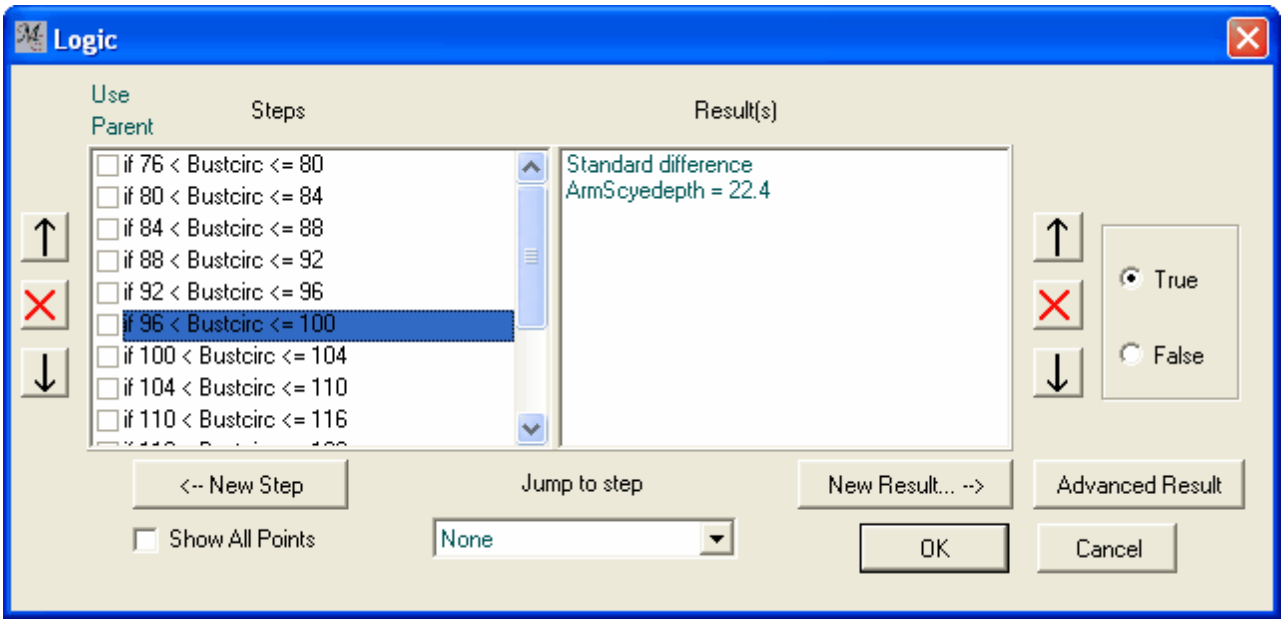
9.1 The Logic window

Procedure: Menu -> Point->Logic-

The Logic window has two main displays.
On the left is a list of Steps. This is a master view of your macro.
On the right is a list of Results for the selected step. Each result recalculates one Measurement, or takes some other program action. Other controls let you add steps and results, and rearrange their order.

The Logic window applies to the currently selected style (see Style Tree 31). It shows only those points that are defined in that style, and it is possible for the same points to appear in a different order (with different calculations) in different styles.

> ***Note:*** *Be sure you are working with the **right style** before you add Steps! Use the "Use Parent" feature as often as possible. It is very important to do all Logic Window operations as high in the Style Tree (see Use Parent 113) as you can because if you create a complex set of steps and later decide to apply them to a different style, there is no way to transfer the contents of the Logic Window except by doing all the work over again.*
> *Defining Logic high in the Style tree applies it to all styles that are descendants of the selected style.*



Components of the Logic Window are:

- **Steps list**

This is an outline of all your macro's logic. The items in the Steps list can include:

1. Points. A point name in the list shows where, in the sequence of events, the point's location is calculated using the formula you created for it elsewhere (see Point types 84). This order of events can be important if a measurement that a point depends on is changed before or after the point is calculated.

Note:
By default, points are NOT shown until the check-box "Show All Points" is checked!

2. Conditional blocks (IF-THEN blocks), also known as Conditions. A condition is a mathematical expression that may be true or false. If it is true, a block of calculations (called Results) is executed. The Results field of the Logic window shows the set of results for whichever step is highlighted in the Steps screen on the left. Optionally, you can also add results that happen if the condition is NOT true (an IF-THEN-ELSE block).

3. Non-conditional blocks. You can make a block of Results that always executes, by making a "Condition" that is always TRUE. Check the "always true" box in the Condition(Step) dialog. MacroGen treats non-conditional blocks much like regular Conditional blocks (If points).

Note:
Each step in the Steps list represents not just a single Result, but a block of Results. The Results field does not show all the results for the entire macro, but only for the Step that is currently selected in the left list field and for the "true" or "false" choice that's selected in the Logic field on the right.

4. Custom program code (advanced users only). You can insert program statements directly into the macro via the **Advanced**... button. MacroGen does not validate the content, which must be in the PatternMaker macro language. *This feature is only for advanced users who already know the language.*

5. "While" loops. (While-JumpToPoint). An *If block* can also cause the macro to jump back to a previous Step in the list and repeat it. The macro keeps repeating the steps in between as long as the condition is true. This is a While loop. MacroGen protects against infinite loops by putting a limit of 20 repetitions on a

loop. Create While loops with the "If condition, jump to point" field above. If "None" is selected, there is no jump. You can only jump backward, not forward.

It is important to remember that the steps in the Steps list represent calculations that are performed in the order shown. Rearranging the order may change your results. For instance, if a point's formula depends on a certain measure, and that measure is recalculated in a Condition, it makes a difference whether the point is calculated before, or after, the measure is changed.

To access While loops, first make sure the check-box "Show All Points" is selected and select a Conditional step (that has steps BEFORE it to jump to other than Start). Next select a step to jump to from the "**Jump to Step**" pull-down menu.

- **Result list**

Shows the "**results**" of those calculations that are done for the selected (non-Point) step. The list you see applies to the Step you have selected in the Steps list on the left. If you click on a different step, the contents of this list change to show the results of the new Step. In a basic result, the macro recalculates a measure.
Advanced results can also calculate point locations, do more Conditions, and execute custom code.
Also, an If point can have two sets of results: one to be executed if the condition is true, another if the condition is false.
The Result list only shows the results that correspond to the current setting of the Logic field.
Results are listed in the order of their execution, just as for Steps. They can also be rearranged with the up and down arrows. If you right click on a result you will get the Cascade Results 164 window.

- **Up/Down arrows and red X's**

  Use the up and down arrows to reorder the Step and Results lists by moving the selected item up or down. The red X icons delete the selected item.

- **"Use Parent" check-box**

  The "Use Parent" check-box for each Step chooses whether this step is taken from the parent of the current style in the Style Tree 26. If it is checked, all of the other fields in the dialog are disabled (grayed out).

- **New Step...**

  adds a new step to the Steps list. (See Create a Step 143.)

- **Show All Points**

  This check-box toggles the display of points in the Steps list.
  If it is unchecked, conditional steps are displayed but Point calculation steps are hidden.

- "**Jump to Step**"

  Turns the selected step into a "While" loop. If any Step other than "None" is selected, a jump is added to the macro. If the condition is true after the point's Results have been carried out, the macro goes back to the named Step and repeats from there. Execution of the loop continues until the jump condition is no longer true, or a limit of 20 repetitions is reached. "Jump to Condition" only applies to If points, not to point calculations.
  Note that only Steps that come before the current Step are shown. Jumps forward are not allowed.

- **New Result**

  Adds a result to the result list for the selected Step. (See Create a Result 144.)

- **True/False**

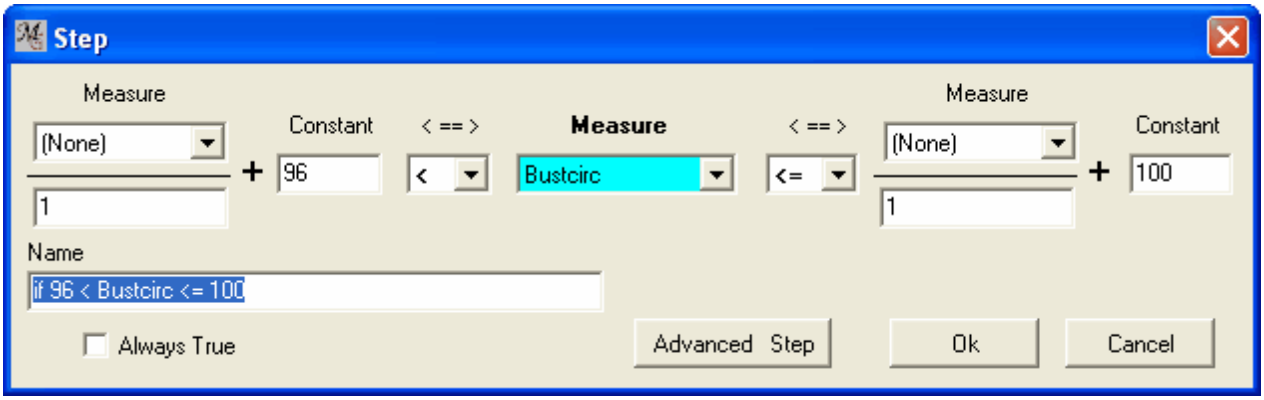
  Sets execution to either the True or False result for a conditional step.
  When you create a Step, its results normally execute only if the condition for that Step is true. But if you select False in the logic field, you can add results that execute only if the condition is not true. This lets you create "**If-Then-Else**" blocks in your macro.

9.1.1 Create a Step

To add a Step to the Steps list

Procedure: Menu-> Point->Logic->New Step

or to edit an existing Step, double-click it: Menu ->Point->Logic ->highlight a Step->double-click



The default form of a Step is an "If-Then" condition: if a measure meets a mathematical comparison as defined in the dialog, then the Results for that condition are executed. The format of the formulas is much the same as for the equations that define Points and Measures,. See Point types 84 and Math 62 for a description of the interface for mathematical formulas. The formula in the illustration would be read as

if(96 < "Bust Circumferencec") <= 100

Read as: If Bust Circumference is greater than 96 and less than or equal to 100

< = = >: The Logic fields are the only parts of the formula that are different from the point and measurement formulas. The choices are

<	less than...
<=	less than or equal to...
==	equals...
!=	is not equal...
>	greater than...
>=	greater than or equal to...

Measure
The name of the measure being compared appears in the center of the Step formula (the blue field). The fields to the left of it define one formula, on the right is another formula. Both comparisons must be true for the Step to be executed.
To leave one of the two halves of the formula expression out, for instance if you only wanted "if(96 < Bust Circumference)" as your condition, set the Measure to "(None)" and do not fill in any number in the Constant box.

Name
You could give this step a name here. This is the name that appears in the Steps dialog and is created automatically when you choose your formula. By default, the "name" of a step is its mathematical formula in Macro language, but you are free to change this to anything you like. Important: do not rely on the name of the Step to correctly show the actual condition formula. Once set, it does not update itself if you change the formula.

Always true:

You can skip the mathematical test by checking "Always True". If it is checked, the Step becomes simply a block of Results that the macro always goes ahead and does.

Advanced Step>>
An Advanced Step uses the Direct Code Entry 159 interface (advanced users only). The code must define a Boolean expression. MacroGen wraps your code in an if-condition of the form

if(<your input>)

See Code 146 for a full description of advanced results.

After you create a Step, don't forget to add results to it. A step with no results has no effect in your macro.

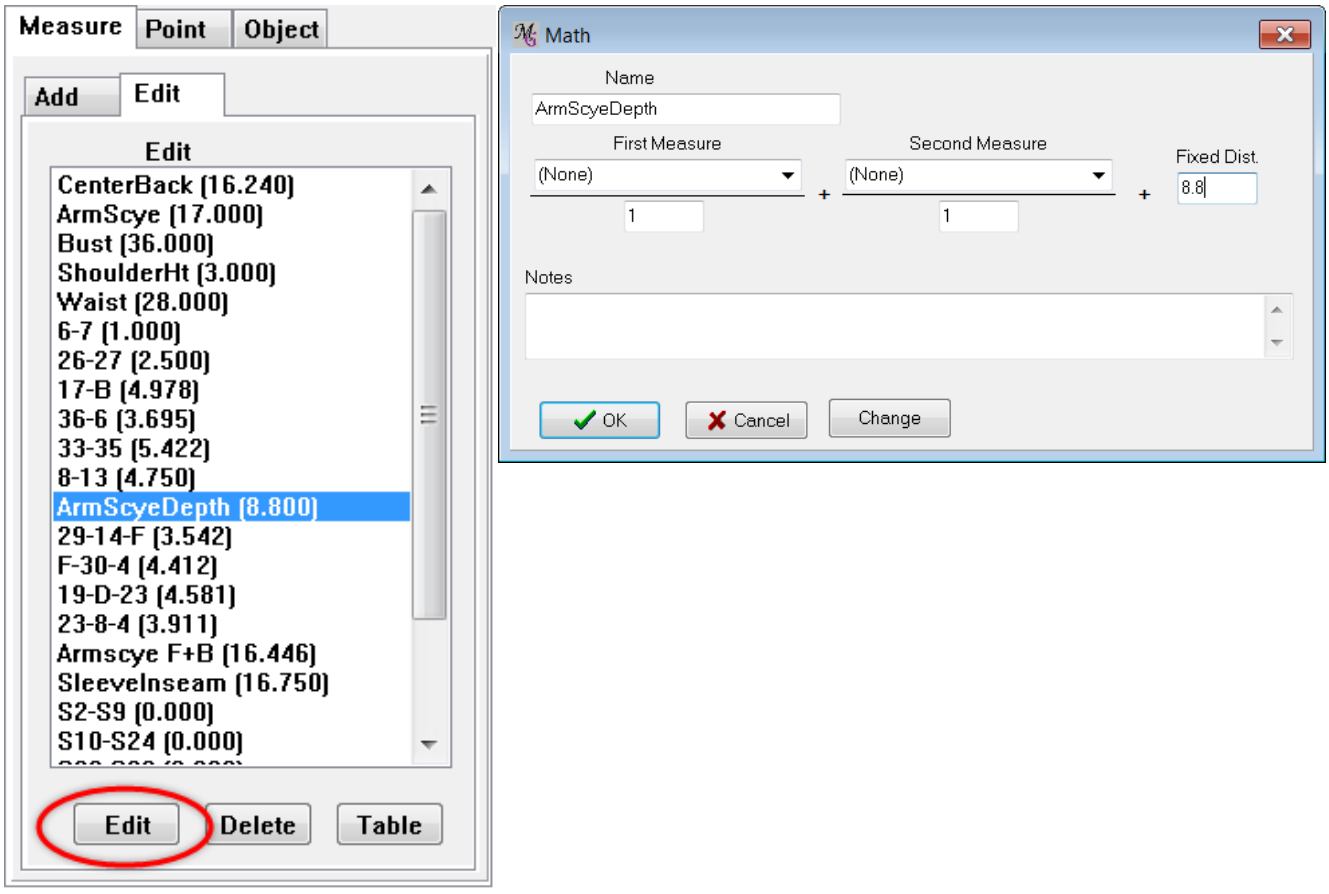
We strongly recommend you to do some examples as shown in the chapter Reference & Examples 172

9.1.2 Create a Result

A step in the Steps dialog must lead to a result or results. Create these results with the Result dialog.

Procedure: Menu -> Point->Logic->Highlight a Step, choose "true" or "false"->New Result

The following Edit measurement 68 dialog appears:



Important: The measures offered in this list are only the prompted measures and Math/Math4 measures.

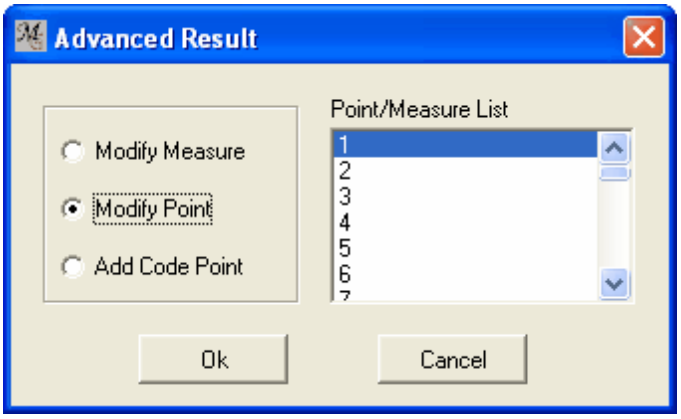
Basic results:
A basic result recalculates a Measure. You use the same dialog that appears with Edit measurement 68, and it works just the same, including the ability to change types with the Change button. The dialog works exactly like the original dialogs for whichever measurement type you have selected.

OK button: Click OK to add the result to the Step. You can add any number of Results to a Step. You must click OK and reopen the Result dialog once for each result you add.

Advanced results:

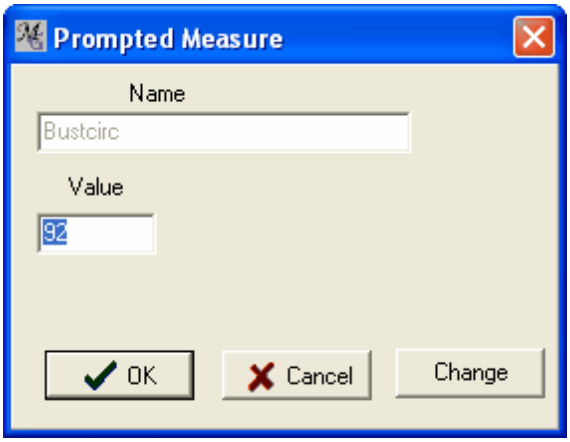
Procedure: Menu -> Point->Logic ->Highlight a Step->Advanced Results...

Advanced results include Steps which work just like the Steps in the main list (you can create nested IF blocks here), setting locations of Points by setting their X and Y coordinates directly, and other direct code insertion.

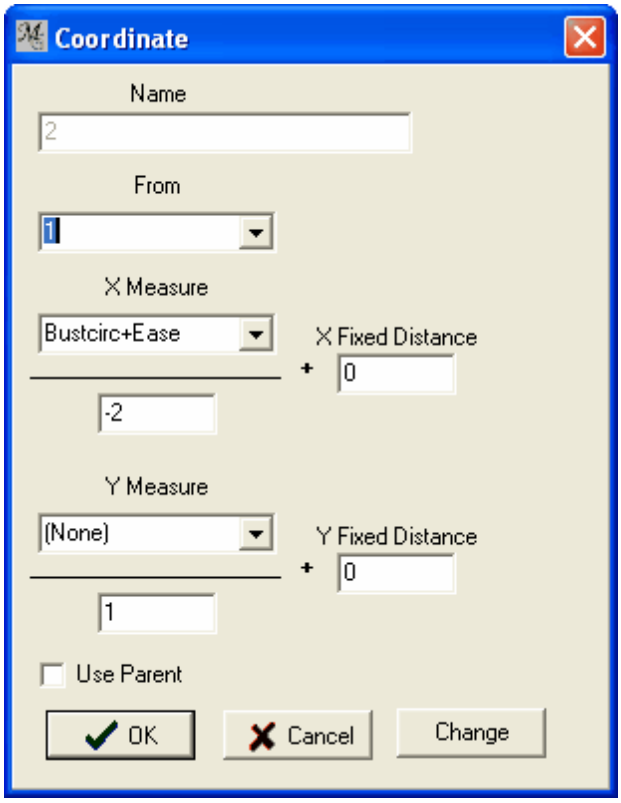


There are three types of advanced results possible. The list on the right of the dialog above updates depending on the radio button you choose on the left. In the illustration, the Point list is displayed:

- **Modify measure:**
  Select a measure name and use the Edit Measure dialog for the measure.
  Note: unlike the basic Results dialog, this list gives you access to all measures of whatever type.



- **Modify Point:**
  Select a point. The point's original creation dialog appears, for example if it was a Coordinate point:



As with measures, you can change its definition and even its type via the Change button

- **Add Code Point**
  An advanced feature that opens up the custom code dialog and inserts custom code as a Result. This is known as a Code point because the macro code appears in the Steps list along with the point definitions. See Code 146 for a full description of code points.

We strongly recommend you to do some examples as shown in the chapter Reference & Examples 172

9.2 Code

Procedure: Menu -> Point->Code

Point->Code takes you to the Code dialog. This allows you to set the location of a point directly by setting its X and Y coordinates, or to insert any statements in the PatternMaker macro language.

Code points can do logic that other points can not. The cost is they are more complicated to use.

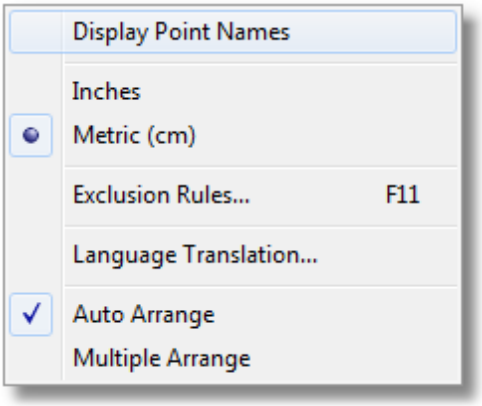
See:
Direct Code Entry 159
Code Point Example 178
Customize 161

Part 10

Settings menu

10 Settings menu

The commands in the Settings menu show how your MacroGen 4 project is displayed. They have no effect on the macro being created.

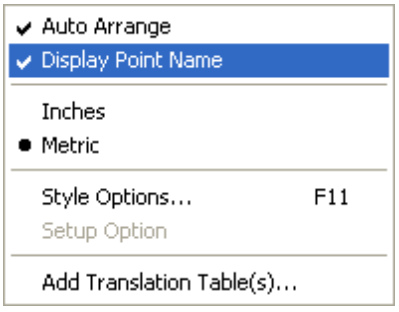


10.1 Display Point Names

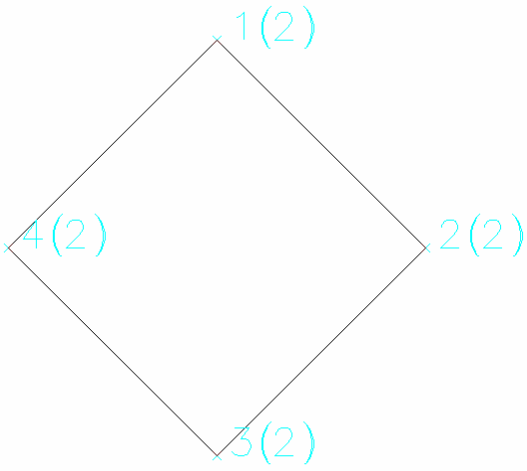
Display point name toggles the display of point names on/off only in PatternMaker.

When a point in PatternMaker does not do what you expect it to do, it can be helpful to check the point in PatternMaker and see its point name.

Don't forget **to disable** this function when you create your final macro! Otherwise your users also see these points names!



Check the command in MG4



Displayed in PatternMaker

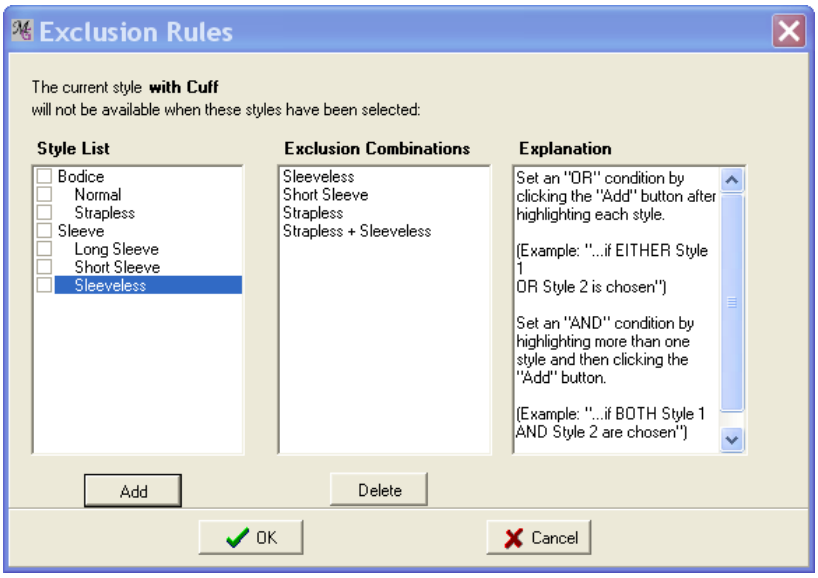
Note:
When you do not see the point names in PatternMaker, activate the command in PatternMaker -> View ->Points -> Show Names.

10.2 Inches/Centimeters

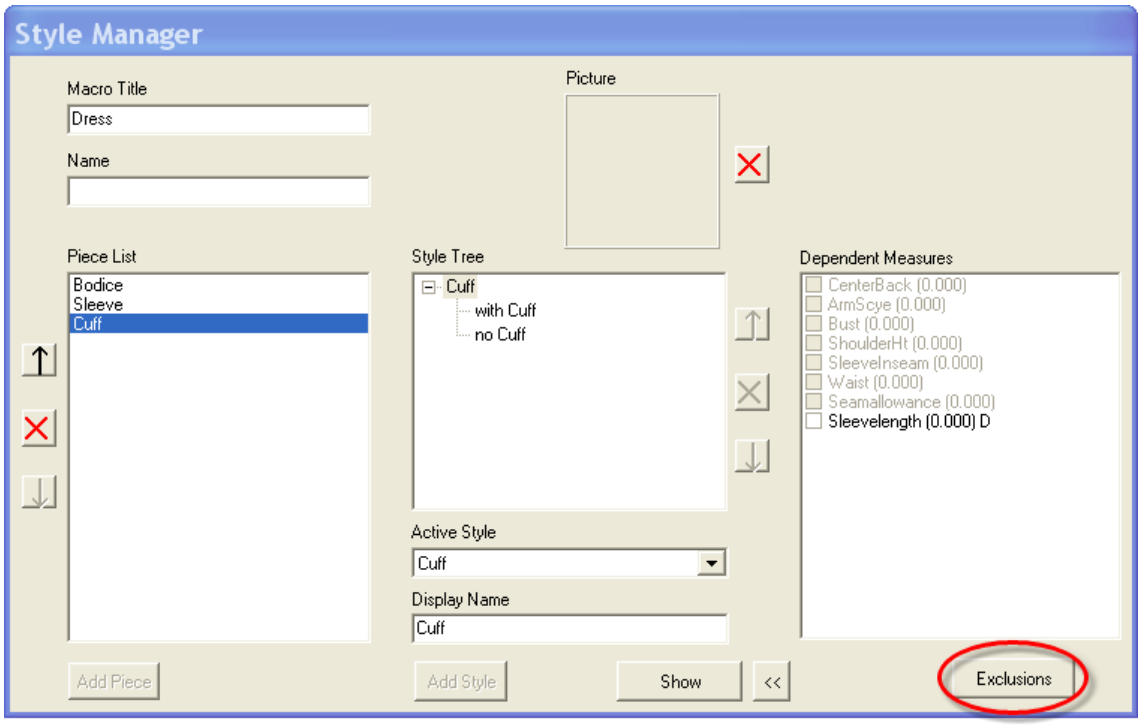
Select **Inches or Metric** (centimeters) to choose the units you are working in.
The internal units of macros are always in inches, but MacroGen automatically converts all measurements so that the user working in metric units need not worry about this, unless using the advanced Code feature.

10.3 Exclusion Rules

Use the **Exclusion Rules form** to remove certain combinations of style options from a choice box at run time (**Style Exclusions**).
This command is an application of conditional logic; i.e. if the user selects a given style option (or combination of options, then certain styles don't appear in a subsequent dialog box.
For example, if a user selects a strapless style for a dress, then only the style Sleeveless should be valid and the other sleeve styles should be excluded.
Or if a user selects as Sleeve style a Short sleeve or Sleeveless the style Cuff after that should not appear.



The Exclusion Rules form can also be opened with the Exclusions button in the Style manager form.
Attaching Style exclusions in the Style manager form to the right style is easier done.



See for more information about Style Exclusions and using the Exclusions rules form in the chapter Style Exclusions 37.

10.4 Language Translation

When you want to increase your sales you can translate the macros into other languages.The PatternMaker program is sold worldwide.
The command "Language Translation" does not automatically translate your macro for you, but it makes it easy to create a translation file containing each foreign word that is included in your macro.
In PatternMaker is defined which language is used in the version. This means when you are using a German PatternMaker automatically the program will show in the macro the German language, if the macro is translated also in German. When not available the base language of the macro will be shown.

Some words are not necessary to translate like group names and text object names. When you add for instance a GR or G_ to your group name or a TXT or T_to your text object name, you know that you don't have to translate those words.

If you are not translating the file yourself, it is recommended that you export the translation table into an Excel format file. This makes it easier for most other people to edit the file and helps you protect your entire .MG4 file from piracy. You should be able to import and export text files into and out of Excel or an equivalent spreadsheet.

Testing another language is often tricky, because PatternMaker and Windows each have their own language options.
For example, when PatternMaker is in Dutch, you can not easily test an English macro and vice versa.
You have to rename the translation files or change the language number index. For example, rename Trans.lan to USTrans.lan. to have an English PatternMaker
Remember to rename it back when you finish the translation text.

There are 7 languages available in this version (although at the moment PatternMaker is available in English, Dutch and German. The Spanish version is being translated at the moment).

- English
- Finnish

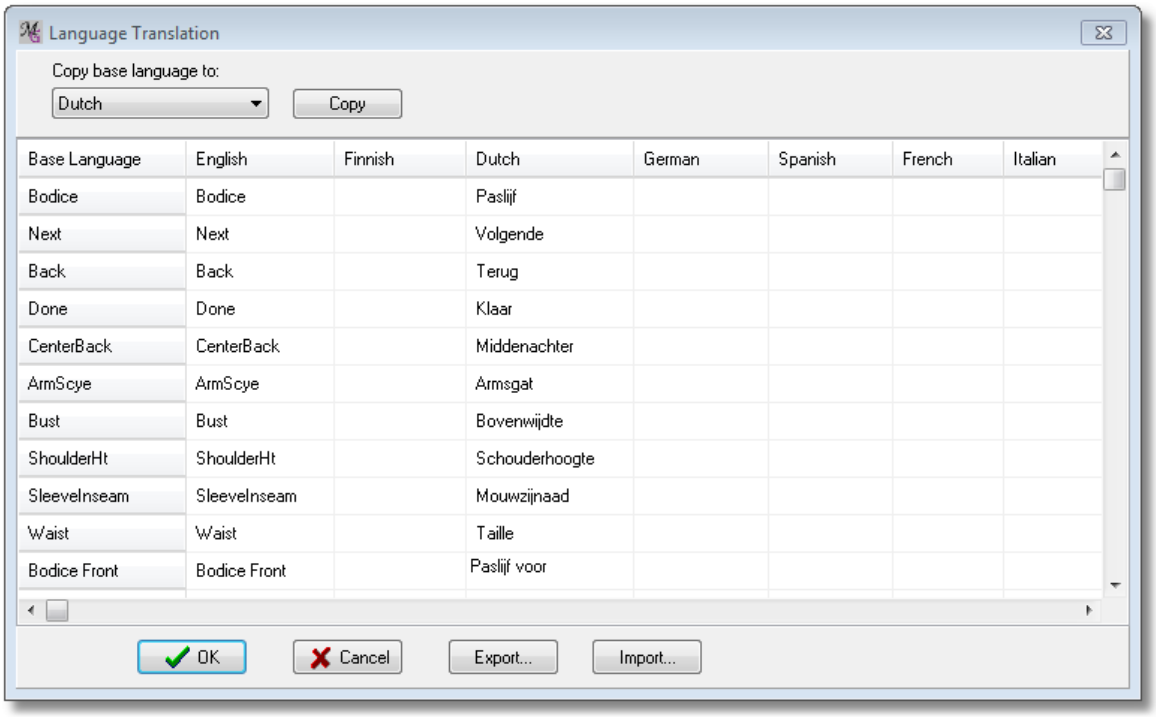
- Dutch
- German
- Spanish
- French
- Italian

If you wish to add a different language contact the service desk first! :
support@patternmakerusa.com

10.4.1 Translation

Purpose:

Create a multi language macro



Procedure:

Menu -> Settings -> Language Translation

- A table appears with all the used words in your macro in the Base column.
  In this case the macro is made in the English language. All the words in the base column are English.
  When you do not translate anything the base language will appear in every language when running the macro in PM.
- Select first the "Base" Language from the drop down menu (English) and click on <Copy>
  The words to translate from the base column are copied to the column that you choose as base language.
  The English column needs no translation.
- When you want to translate the macro also in other languages copy the base language also to other language columns and translate the words.
  Select the "other Language"(Dutch) from the drop down menu and click on <Copy>
  The Base language is copied to the language column that you selected.
- Translate the words in this column.

You can overwrite the English words by Dutch words.

- Click on OK button to save the language to your macro.

Note: *In the macro in all languages with no translated words the base language will appear.*
In PatternMaker is defined which language is used in the version. This means when you are using a German PatternMaker automatically the program will show the German language in the macro, if the macro is translated also in German. When no translation is made in the German column, the base language of the macro will be shown when running the macro.

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10.4.2 Export Language Translation

Purpose:

To make a external Translation File

When you want to have the table translated by somebody else who is familiar with that language or you want it translated by a professional agency, then you should export the table to Excel.

Procedure:
Menu -> Settings -> Add Translation Table

- Choose your base language
- Click on the Export button
- A Save dialog window opens
- Automatically the new folder Translations (in My Documents/PatternMaker/Personal Files) opens.
- Give your translation file a name and notice that it has the extension *.trf

In Explorer you can find the translation file to send to the translation agency.
This trf. file can be opened with Excel.
When opening the file select " Show all files".
For opening the file select the "Separate option" and "Divided with Tabs".
In the Excel file you will find all languages in separate columns.
Translate the words and save the file. It has to stay a trf. file when being imported in the macro project afterwards.

	A	B	C	D	E	F	G	H
1		English	Finnish	Dutch	German	Spanish	French	Italian
2	Pocket	Pocket		Zak	Tasche			
3	Next	Next		Volgende	Nächste			
4	Back	Back		Terug	Zurück			
5	Done	Done		Klaar				
6	Heigth	Heigth		Hoogte				
7	Width	Width		Breedte				
8	Base	Base		Base				
9	straight pocket	straight pocket		rechte zak				
10	curved pocket	curved pocket		ronde zak				
11	Flap	Flap		Klep				
12	straight flap	straight flap		rechte klep				
13	curved flap	curved flap		afgeronde klep				
14	G_pocket	G_pocket		G_pocket				
15								
16								

10.4.3 Import Language Translation

Purpose:

Add a foreign/external language file to your macro

When you receive the translation file back from the translation agency you can import this file back to your macro. Save this .trf file in My Documents/PatternMaker/Personal Files/Translations

Procedure:
Menu -> Settings -> Add Translation tables

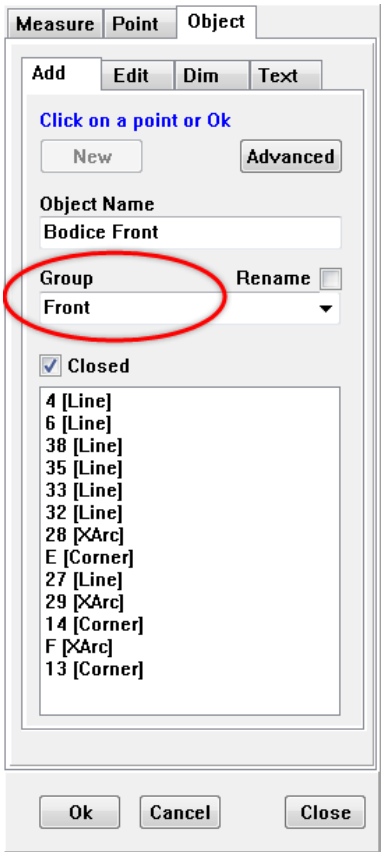
- Open the macro you want to add the external file
- Click the Import button.
  The folder Translations (in My Documents/PatternMaker/Personal Files) will open.
- Select the right translation file (*.trf) and click on "Open"
  You will see that the new translated words are added to the current file.
- Click on OK to save the new language translation into your macro.
- Save the macro with the Save button or File/Save

10.5 Auto Arrange

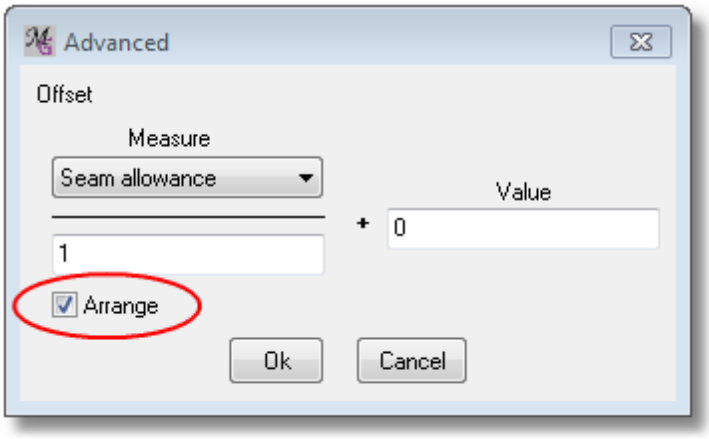
The Auto Arrange function arranges pattern pieces on the page. It rearranges the pieces so that they don't overlap, although the arrangement is not guaranteed to be the most efficient possible.

Nothing happens immediately when you select Auto Arrange. The actual arranging takes place when the macro runs in PatternMaker, so is invisible in MacroGen.
There are three steps in auto arranging:

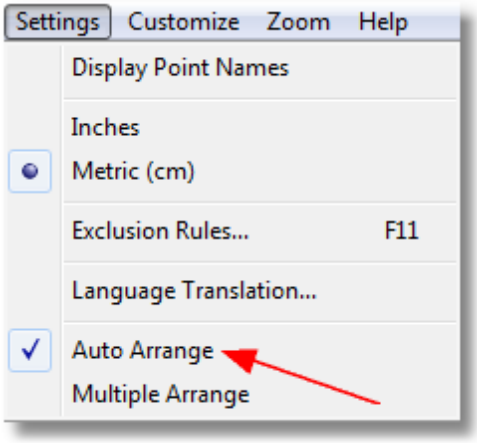
- Group objects together which belong together and should be moved together with Grouping objects 132.
  The objects that are drawn inside a main object (like grain lines, interfacings, text objects, darts etc) should be grouped with this main object they belong with. If an object is not grouped, it won't be moved together!



- Designate the objects to be arranged with the Arrange 136 function .
  Only macro objects that represent actual pieces of fabric to be cut out should be designated. (***the outside pattern***)
  If your macro contains other objects, such as grain lines, button plackets, or lines to indicate interfacings or text objects do not mark these for arrange. The Arrange function makes sure that marked objects do not overlap, but it ignores non-marked objects.



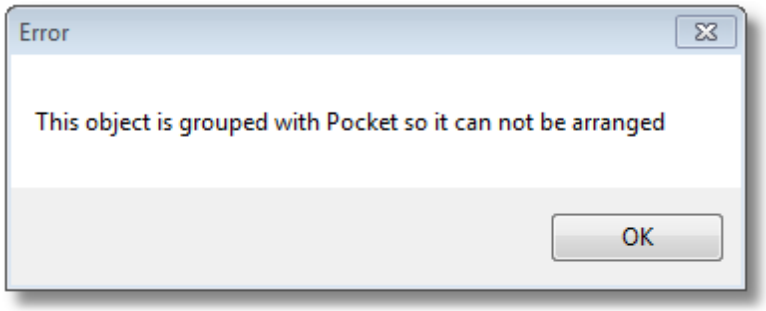
- Check the **Auto Arrange** item in the Settings menu. Now, when running the macro in PatternMaker all the marked as Arrange objects in the macro are moved to their Auto Arrange positions just before the macro ends.



See also Multiple Arrange 155

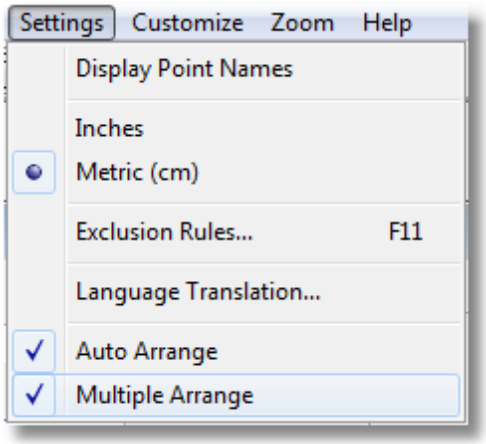
10.6 Multiple Arrange

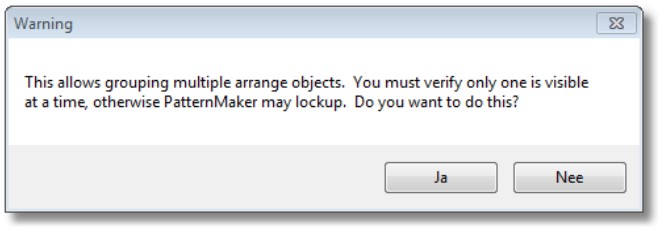
It is normally not possible to have the Arrange box checked in more then **one object in one group**. Only the **outside pattern** (the main object) will be checked as "Arrange"; all the other objects belonging to the same group like grain line, text objects and darts will be drawn inside the pattern and eg overlap the pattern.
When you try to check the Arrange command more then once in one group, MacroGen will show a warning message about this.



Checking more then once the Arrange checkbox in one group can otherwise give problems when the patterns appear in PatternMaker (for instance the grain line is also checked as Arrange, this means in PatternMaker it does not want to overlap the main pattern.

It can happen that **more then one object in a group** needs to be marked as Arrange. This is for instance happening when you have 3 different front skirts patterns with 0, 1 or 2 darts in it.
In programming the logic the designer will have defined under which conditions which front skirt has to appear. The designer needs to calculate and test carefully that the logic with which the skirt patterns appear is verified and in every case only one front skirt will appear. It may never occur that more then one front skirt is drawn in PatternMaker. This causes problems with the program and also a confusing pattern.
When this is the case the Multiple Arrange in the Settings menu needs to be checked.
After checking the Multiple Arrange command in the settings menu a warning will appear to let the designer know the consequences of the checking.





After checking this Multiple Arrange command it is possible to check more then one object as Arrange. Depending on the conditions and the given measurements only one main object will appear on the screen and be part of the group.

See also:

Arrange 136

Auto Arrange 154

Part 11

Programming Topics

11 Programming Topics

Macro Generator is a Visual Development Tool.
One of its strengths is that people don't need to know they are programming, when using it. That means a non-technical designer can use it without having to worry about learning a bunch of tech talk.
On the other hand advanced people with programming skills can look under the hood and add new features. This makes Macro Generator an extremely flexible and powerful program.

The Macro Language is a C-style language.
Many features that aren't useful in designing garments, such as pointers and structures, have been removed.
Special features that are useful to designing garments have been added.

11.1 What is a Point?

A point has a pair of X, Y coordinates. They are used to do the calculations to create a drawing. They contain a bit of programming code to determine what inputs are used and how the two values are created.

In the macro code there are two arrays x[] and y[], which store all the point values. The value of a point can be accessed as:

@Point[PointName].X
@Point[PointName].Y

The index in the x[] and y[] array can be found using

@Point[PointName]

This is used to pass points to a function.

When you see a point listed in the Point list 45, this represents a block of code that calculates that point's X and Y values. When you add a point to an object, the macro reads that point's X, Y values and uses them to create the corresponding PatternMaker item (that's why it's possible to use a MacroGen point many times, to add points to different objects). When you create the different Point types with their different formulas for calculating X and Y, you are setting the code contained in those points' calculations. And a code point is a block of macro-language statements that fits into the list of point code, even though it may not have a point structure connected.

See Code Examples 178 and Declarations 163 for more information on how to use points in code.

11.2 What is a Measure?

A measure is the equivalent of a variable.
They contain a bit of programming code to determine what inputs are used and how the two values are created.

@Measure[MeasureName].Value

The index in the array can be accessed via:

@Measure[MeasureName]

This is used to pass measures to functions.

See Code Examples 178 and Declarations 163 for more information.

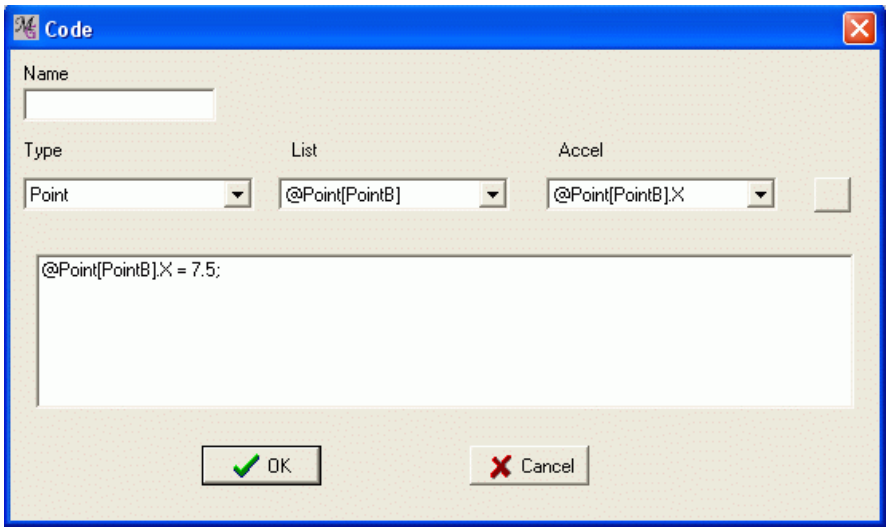
11.3 What is a Piece?

A Piece is the same thing as a Marker Piece in PatternMaker Professional version?
What is the relationship between a Piece, a Style, an Object, and a group?

The Style Manager window (Using the Style Manager) 26 is organized into a list of Pieces.
A Piece generally corresponds to a pattern piece of the finished garment, such as a bodice piece with associated darts, grain lines, and descriptive text, or to a Marker piece as described in the PatternMaker manual.
However, this usage is ultimately up to the MacroGen programmer.
To MacroGen, **a Piece is a root node on the Style Tree**.
Thus, each set of style branches consists of the various options possible for a given piece.

11.4 Direct Code Entry

You can enter macro code directly into a MacroGen project, if you know the PatternMaker macro language.
Any time you see the big edit field in any of the advanced code dialog boxes, this is what happens.
This is the Point->Code dialog box:



Think of this window as an aid to typing in code. It helps you put together complicated symbolic names, but it does not prevent you from typing what you want (or making errors).

The point and measure names used by MacroGen are symbolic and cannot be used directly in the actual macro. Rather than document the syntax, PatternMaker Software has provided an Accelerator feature to construct correct reference names for you.
Names are of the general form @Type[Name].member .

- **Name:** Type in the name of the desired point or measurement (not required if you use the other inputs). MacroGen does not require the name you enter to be a valid one.
- **Type** of data structure. Choices are Point, Measure, and Object**.**
- **List:** A list of the available items of the selected Type. This box updates whenever you change the Name or Type.
- **Accel. :**The "Accelerator" puts together the full reference name for the data item you selected. Choices in this list show all the elements for the data type you selected--for instance, a Point is a structure with an X value, a Y value, and a name.
- **Paste** The Insert button pastes the contents of the Accel field into the big Code field. Note that it only inserts the correct reference name for the data item you selected; it does not construct a complete macro language statement.

- **Code field.** The contents of this field are inserted verbatim into your macro. If it contains errors, your macro will have bugs. You can type or paste text directly, or insert the contents of the Accel field.
- **OK button.** If the button is grayed out there is a problem with your syntax. If your syntax is correct but there is another error you will get a message but the code point will be accepted. You need to fix the error before the macro will run properly.

Programmers may want to code a PatternMaker macro just like they would a traditional programming language, by typing into a text editing program. This works for quick development, but we advise programmers to enter their changes into MacroGen, so that the changes become a permanent part of the macro project.

The PatternMaker language is not documented here. It has a syntax similar to the C language. Programmers familiar with C may want to experiment with it.

11.5 Data Types

If you read a .mac file you'll see the following variable types:
double, object, selection, and point.
The macro language also supports color, line, pattern and string.

double
A floating point number. It is used to represent all types of numbers.

object
A PatternMaker object.

selection
A PatternMaker selection set. It can contain either points or objects. Selection sets are used to to create groups.

point
A PatternMaker point.

color
The RGB value of a color.

line
The line style for the border of an object.

pattern
The fill style of an object.

string
A text string

11.6 Accessors

The following variable arrays are used in MacroGen.

x[ ], y[ ] - The x and y values of the point list
Var[ ] - The values of the measure list
Flow[ ] - The list of pieces in the drawing. Flow[0] will be the root piece. Each value represents the selected style for that piece.
Obj[ ] - The list of objects in the drawing.
HideObj[ ] - Whether the object should be created. If the element contains 1 the corresponding object in Obj[] will not be created.

The index of these arrays can change as the MacroGen project is edited. If hard coded values were used to access them the result would be brittle files. The solution is to use assessors
These can all be accessed via special accessors. They are:

@Point[PointName].x	The x value of PointName from x[]
@Point[PointName].y	The y value of PointName from y[]
@Point[PointName]	The index of PointName in x[] and y[]
@Measur[MeasureName].Value	The value of MeasureName from Var[]
@Measure[MeasureName]	The index of MeasureName in Var[]
@Object[ObjectName].Hide	The hide value of ObjectName from HideObj[] If this is 0 the object is created
@Object[ObjectName].Object	The ObjectName from Obj[]
@Object[ObjectName]	The index of ObjectName in Obj[] and HideObj[]
@Piece[PieceName].Style	The style selected by the user for the piece. The value matches @Style [StyleName]
@Piece[PieceName]	The index of the PieceName in Flow[].
@Style[StyleName]	The style value in a piece. It should match @Piece[PeiceName].Style

11.7 Customize

Customize allows a programmer to expand MacroGen.
Custom variables and functions can be added. Using the Code editor they can be packaged and distributed.

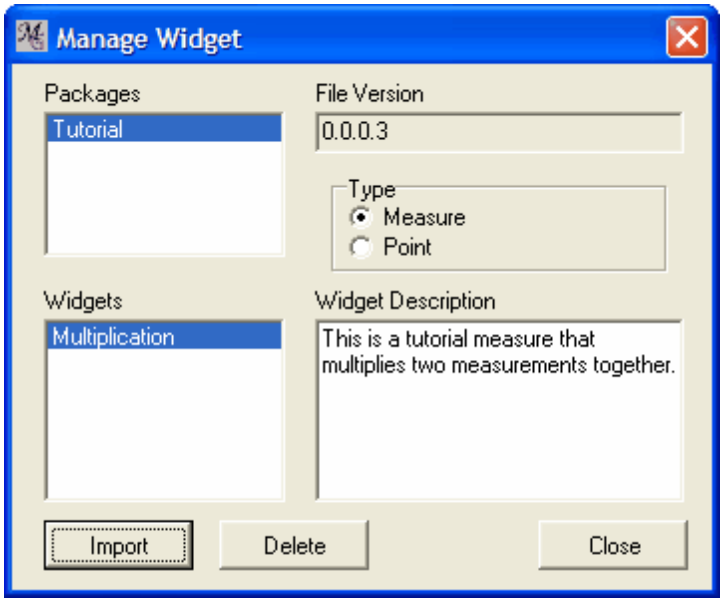
Custom Point or Measurement types can be created using Customize.
They can be prototyped using Functions, Declarations and Initializations.
When they work they can be entered into Code Editor to create a package that can be imported.

An important difference between packages and customized functions, declarations and initializations is that packages are added on to MacroGen. They can be used in any project. If the project is transferred to another computer the package must be imported on that computer.

Functions, declarations and initializations appear only in the current project. This makes them useful for prototyping a new package or adding a special calculation that won't be used elsewhere.

11.7.1 Manage Widget

Widgets allow custom measures and points to be created via the Code Editor.
Refer to the Code Editor's manual for instructions.
Imported widgets will show up in the point or measure list. Widgets are grouped together into a package. A Widget package can be loaded by Customize->Manage Widget->Import



The parts of the **Manage Widget form** are:

Packages
A package is a group of widgets. Highlight a package and its widgets will appear in the widgets list.

Widgets
The list of widgets in the package. This name will show up in the point or measurement list.

File Version
The version of the package that the widget was imported from. Each widget stores the version of its package. This allows multiple versions of widgets from the same package.

Type
Is the highlighted widget a point or a measure?

Widget Description
A description of this widget.

11.7.2 Functions

Functions calculate either points or measures.
Values can be passed to them using Accessors[161]. Multiple functions can be created in the same code block.

Functions need to be called from **code points**.

See : Customize Example[179].

11.7.3 Declarations

Global variables can be added in Declarations. Most commonly they are table arrays (see Customize Example[179]).
They also can be used to buffer values of a complicated calculation.
An example of declaration code would be:

```
double Size[4]
```

11.7.4 Initializations

Initialization goes hand in hand with Declarations[163].
Here are two examples of a declaration:

Example 1)

```
Size[0]=1;
Size[1]=4;
Size[2]=9;
```

Example 2)

```
initSize();
```

This assumes initSize() is declared in Functions[163].

See : Customize Example[179].

11.8 Order of Events

The macro that your MacroGen project creates does things in a specific order. This order is not always apparent when you are moving between MacroGen's different displays and windows. For basic work, the user can let the software take care of the order, but users of advanced features eventually need to know what happens next in order to make calculations logical.

Each MacroGen macro has the following logical blocks:

- **Define** the names of points, measurements, and custom plug-ins that will be used. This step is not seen by users.
- **User style choices.**
  Run dialog boxes for the user to make style choices. The user must select a style for each Piece in the macro. These choices appear in the same order that the pieces and styles appear in the style tree. Each dialog box represents a branch in the Style tree, so one dialog box appears for each level of depth of the tree (the depth may vary depending on the user's choices), for each Piece.
- **User measurements** Prompt the user for measurements. This process has two steps:
- **--Run one dialog box** to prompt for each measurement table[72] that is defined.

- **--Run dialog box(es)** for prompted measurements.
  All prompted measurements, including those dependent measurements that apply to the user's style choices, are listed in the order they appear in the Measure list 44 in the Measure/display tab. MacroGen decides whether to display the measurements in a single dialog box, or split them up. The MacroGen user cannot control this breakdown.
- **Calculate all the points and measurements.**
  This can be a very complex section of code. MacroGen goes through all points, code points, and IF conditions in the order they are listed in the Point list 45. Every time a point or measurement changes, MacroGen goes through all the points and measurements that are dependent on the changed value, and updates all of them. This can lead to multiple rounds of updates from a single change. It is possible for one value to be changed many times during the macro, but MacroGen always ensures that only the final value matters.
- **Create the objects.**
  For each object, add all of its points as listed in the Object list 47 in the Object/display tab. MacroGen works through the Pieces in the order they are listed in Style Tree, and for each piece it creates those objects that are defined for the style the user has selected, in the order listed in the Object list 47 in the Object/display tab.
- **Group objects**
- **Auto-arrange** those objects that are marked for auto-arrange.
- **Zoom** to fit the entire macro results on-screen.

MacroGen macros do not affect what is already in a PatternMaker file.

11.9 Cascade Results

The following is an advanced topic beyond the needs of most designers. Do not worry if you do not understand it.

When a point or measurement is changed, then all measurements dependent on it are recalculated.
For example, a measure that is the distance between two points is recalculated when either point changes. This ensures the measure is always the distance between the two points.

If a math measure uses a distance measure the math measure is recalculated when the distance measure is changed. This creates a cascading effect of measurements being recalculated, hence the name.

When importing a design from a programming language this cascading effect causes problems when dealing with logic. Programs use if ... then statements to modify specific variables (measures). Cascading changes many variables.

Cascading can be turned off by right clicking on a result under Point->Logic. It can be turned off for the entire project or for the current measure.

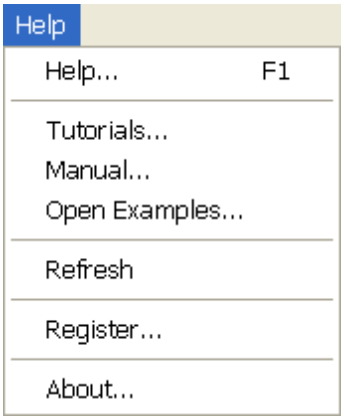
Part 12

Help menu

12 Help menu

In the Help menu you can find several possibilities for getting more information about the program.
You can open the Help file or the PDF files of the Manual and Tutorials.

We advise you to read over the manual and do the tutorials to get acquainted with MacroGen 4

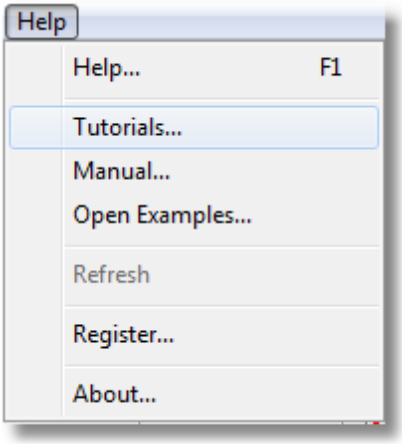


12.1 Help

Here you can find the Help file, or use **F1 on your keyboard** to open the Help.

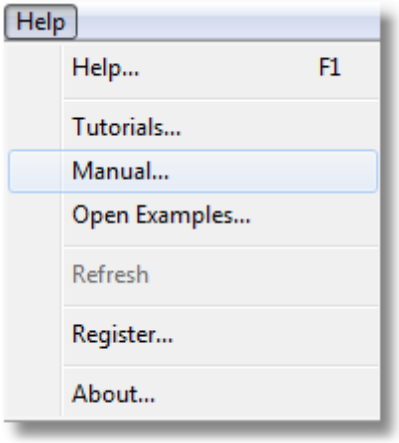
12.2 Tutorials

When selecting Tutorials MacroGen will open automatically the Tutorials pdf file. You will need a PDF reader program for this.
See for more information: Tutorials 177



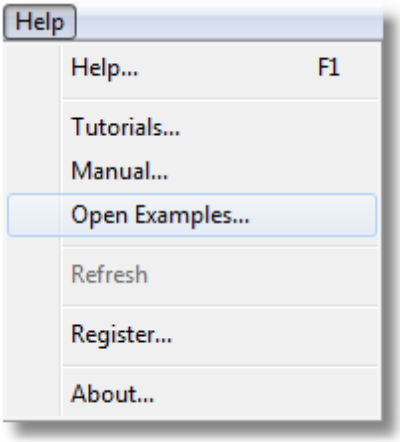
12.3 Manual

When selecting Manual MacroGen will open automatically a printable Manual (pdf file). You will need a PDF reader program for this.
The content is the same as the Help.



12.4 Open examples

The examples(mg4 files) used in the tutorials or the manual are placed in My Documents/Patternmaker/Personal files/Designers/Tutorials.
When you select in the Help menu "Open examples..." the folder Tutorials in the Designers folder will open and you can select the right mg4 file.



You can also use the Open file command. The folder Designers will open automatically, because this is the folder to save you mg4 projects.
and you can select the folder Tutorials which will show all the saved tutorial projects.

12.5 Refresh

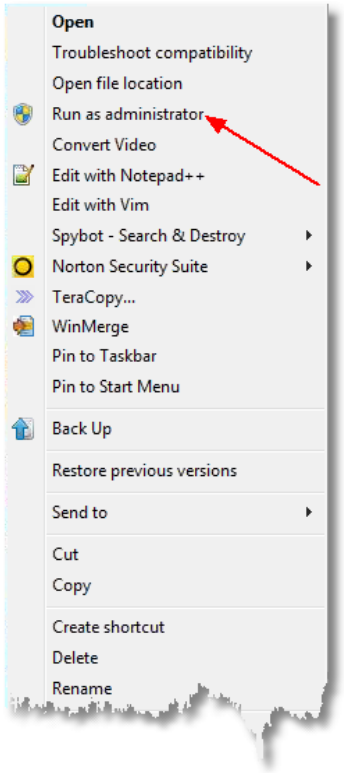
Purpose:
Recalculates all the points and measures

To increase speed MacroGen recalculates only what it needs to when a change is made.
Sometimes it gets confused and the drawing is incorrect.
The Refresh command recalculates all the points and measures so the drawing is correct.

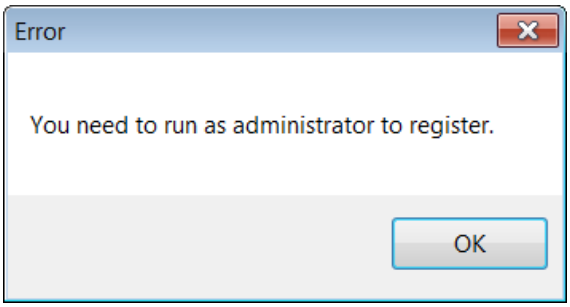
12.6 Register

In MacroGen 4.5 you use a serial number to unlock the program. If you don't register the program you can still use it, but you can't generate and test a macro for use in PatternMaker.
When you ask for a demo or have bought a version you will receive (by mail) a **serial** number that you need for registration.

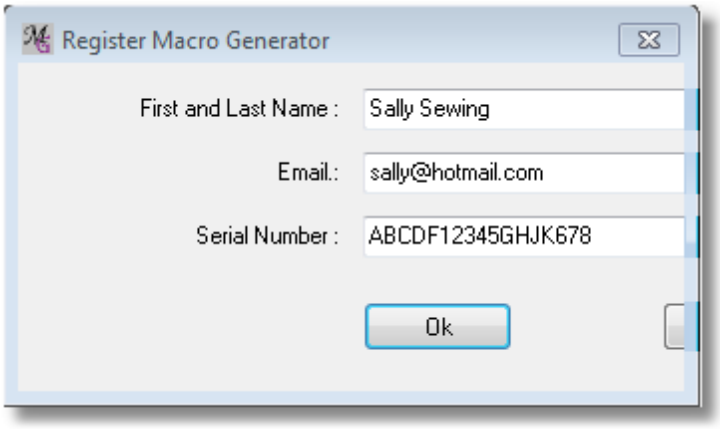
Procedure:
1. Registering is done on internet, therefore you will need an internet connection for registering. If you have not an internet connection on your computer/laptop please contact with us for a manual registration.
2. Registering can only be done when you run PatternMaker as an administrator.
   Click with your RightMouse at the icon of PatternMaker on your desktop or via the Start menu.
   Select "Run as administrator".
   A Windows message appears if you want to allow opening PatternMaker.
   Click Yes.
   PatternMaker will open.
   Select in the Welcome form "Empty page" and click OK.



   When you want to register without selecting the Run as administrator option, you will get a message That you have to run as administrator to be able to register.



3. Select in the menu Settings ->Register. The Register dialog box opens:



4. Type in your name, email address, and the serial number you received when purchasing PatternMaker or when you asked for a demo.
5. Click "Ok."
6. You will get a message that you are successfully registered and that it is necessary to exit the program and start it again.
   Now Macrogen will have the required features.
   After that, you can open Macrogen in the normal way without the Run as administrator option selected.

When the registration could not successfully be done (eg. because you have no registrations left or you do not have internet connection) you will get a message of the reason.
When this reason is not helpful, please contact us at <%PM_EMAIL%>

12.7 About

The About window contains copyright information and current version number for MacroGen.
It shows also if the program is registered and to whom.

Look on the website for the latest version!

Part 13

Reference and examples

13 Reference and examples

13.1 Hotkeys

Accelerator Keys:
Accelerator keys are the underlined letters that appear in a word on menus, buttons, and dialog boxes. They allow you to quickly access the associated item without using your mouse. To use the accelerator keys, hold down the <ALT> key, press the underlined letter, and then release both keys.

Keyboard Shortcuts:
With keyboard shortcuts you can often replace several mouse clicks with a simple pair of keystrokes. To use the shortcuts, press the first key indicated. While continuing to hold it down, press the second key, then release both keys.

File Menu	**Shortcuts:**	**Measure**	**Shortcuts:**
Begin a new file	Ctrl+N	Measurement Table	F4
Open an existing file	Ctrl+O		
Save a file	Ctrl+S		
Create a macro	Ctrl+M		
Test macro	Ctrl+T		
Edit macro	Ctrl+E		

Zoom Menu	**Shortcuts:**	**Object Menu**	**Shortcut:**
View all points	Ctrl+A	New object	F10
Zoom Out	F2		
Zoom In	F3		

Help Menu	**Shortcut:**	**Settings Menu**	**Shortcut:**
Help Contents	F1	Style options	F11

13.2 Skirt with three ease options

To practice working with Logic we advise you to finish the example skirt with variable darts and add some ease options.

(Note that in this project to make the example simple we have programmed 2 equal darts in the front and back skirt. Normally the back dart is bigger then the front dart.Depending on the measurements it could also be better to draw two darts at the back skirt.*)*

The examples use Metric units of cm so you if you don't ordinarily use Metric units, you should select Settings/ Metric before loading example files.

Add three ease options with three non conditional Blocks (Always true)

Select the Open file command.
Open the Tutorials folder.
Open the MacroGen 4.5 file "Skirt with NO Logic" in

To save the original file **save the file as** a new name

In the Style manager rename the Base Style to "Hip Ease"

Make three sub-styles (children) in the Style Tree

- Normal
- Tight
- Loose

Open the Parent Style Hip Ease

Open the logic form with **Menu->point->logic**
(there are 2 ways to open the logic form: select the right style(highlighted) and go to Menu-Point-Logic
or via Open Style with Show and then go to Menu-Point-Logic)

- Click New Step
- Check the "**always**" radio button
- Rename the name "True" into "Ease"
  Click OK
- Highlight the Hip Ease step in the Step form
- Click New Result. The measure list opens.
  Select Hip + ease.
  Hip + ease = Hip Circumference/1 + 2
  In the parent we have the default setting, ease is normal
  Click OK
- Click New result
- Select Waist + ease.
  Waist + ease = Waist Circumference/1 + 2
  In the parent we have the default setting, the ease is normal
  Click OK
- Click OK to close the Logic form of the style Hip Ease
  We are back in the Style Manager
  The child style Normal has the same ease as the parent, so we do not have to change anything in this style.

- Open the child style Tight
- Open the logic form with **Menu->point->logic**

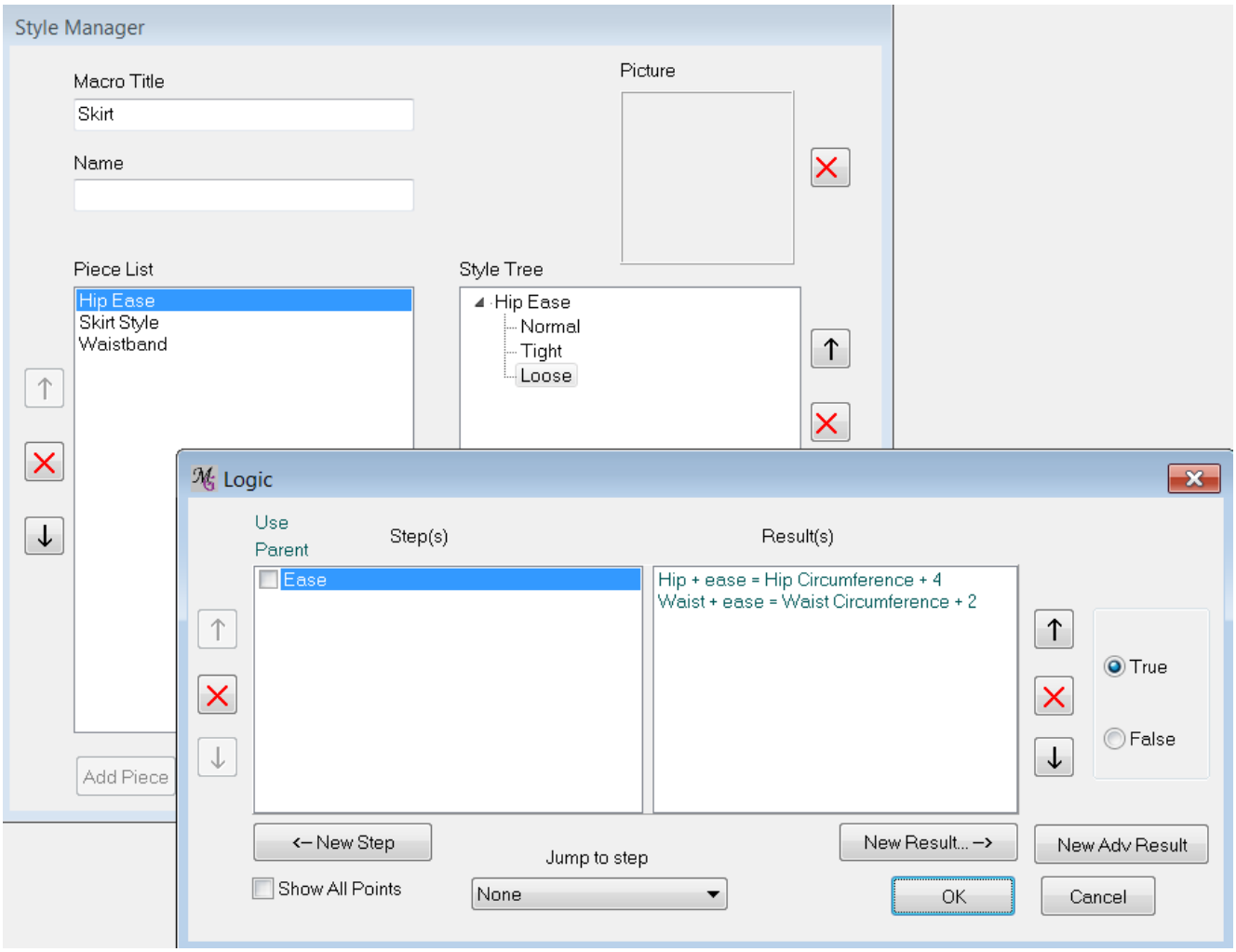
- On the left we see the step Ease. To be able to change the results of the Hip Ease step **uncheck** the use parent box
- Click the first result Hip + ease
  Change the result in Hip = ease = Hip Circumference/1 -2
  Click OK
- Select the next result Waist + ease.
  Waist + ease = Waist Circumference/1 + 0
  Click OK
- Click OK to close the logic form of Tight

- Open the child style Loose
- Open the logic form with **Menu->point->logic**

- On the left we see the step Ease. **Uncheck** the use parent box
- Click the first result Hip + ease
  Change the result in Hip = ease = Hip Circumference/1 +4
  Click OK
- Select the next result Waist + ease.

Waist + ease = Waist Circumference/1 + 2
Click OK

- Click OK to close the logic form of Loose



You have added 3 ease options to your skirt.
When the customer selects ease option "Tight" the macro always draw the hip circumference minus 2 cm.
When the customer selects ease option "Loose" the macro always draw the hip circumference plus 4 cm
When the customer selects ease option "Normal" the macro always draw the hip circumference (like you did in the drawing)

Note:
You can check the mg4 file "Skirt with 3 ease options" to see if you did it right.

Note:
There are more ways to do this logic.
We have chosen to use a separate measure for Hip circumference plus ease that is used in the project to draw the objects. In this way the measure Hip circumference is always the original hip circumference.
You could also have made separate logic steps for the ease, so no logic in the parent because that draws the default measurements. And in the style Tight a separate ease step Tight and in the Loose style a separate ease step Loose.

13.3 Skirt with variable darts

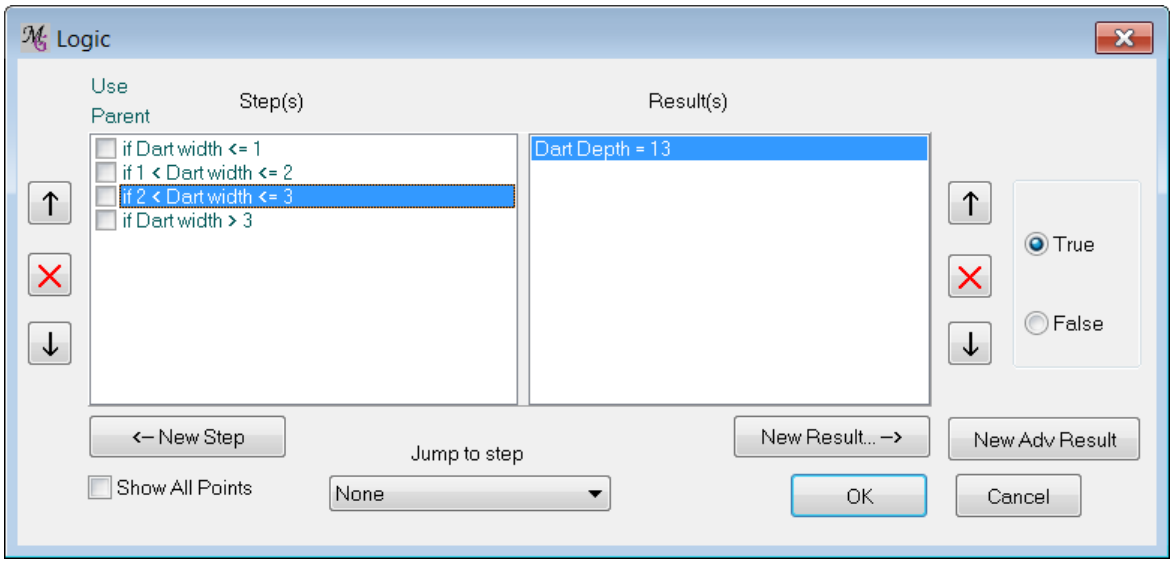
This skirt has two darts (one at front and ont at back) with a variable dart width depending on the difference between hip circumference and waist circumference.
When the difference is small, the darts will be small. When the difference is bigger, the darts will be wider.
When the darts become wider, the length of the dart has to be longer. We want to make variable dart lengths.
The rule for the length of the dart is:

When the width of the dart is 1 cm, the dart depth is 5 cm
For every 1 cm extra width the dart length is + 4 cm
So if the dart width is 3 cm then the dart length is 5 + 4 + 4 = 13 cm
If the dart width is 1.5 then the dart length is 5 +4 (when the dart width is bigger than 1 and smaller as 2, the dart length is 9)

We have to implement this into MacroGen. This is also done in the Logic form.

Open the mg4 file "Skirt with NO Logic"

1. Select the Open file command.
   Open the Tutorials folder and open the Skirt with NO logic.
2. Open the Style Skirt Style (here you find the drawing with the short darts)
3. Open the Logic form via Menu -> Point -> Logic
4. Click on New Step
5. Choose Dart Width in the measure field
   Select and fill in the form: Dart width <= 1
   The formula you filled in will appear in the name field. Click OK
6. Highlight the Step you just made
   Click on New Result
   Select "Dart Depth"
   Dart Depth = 5 (*the original formula is still true*) . Click OK
7. Click New Step
   Fill in 1< Dart width =< 2. Click OK
8. Click New Result
   Select Dart Depth
   Dart Depth = 9
9. Repeat this until all widths are covered or maximized.



In the drawing you can see that the darts have become longer now.
Try several hip and waist circumferences to check if your Logic works correct.

Note:
You can check the mg4 file "Skirt with Logic" to see if you did it right

Note: this is just an example how to make logic.
In a real skirt macro you would specify a different formula for the widths of the darts for the front and back (1/3 width at front, 2/3 width at back). Accordingly the length of the darts would have to be specified for the front darts and the back darts.

13.4 Active Style Example

Select the Open file command.
Open the Tutorials folder.
Load the file ActiveStyleExample.mg4.

It has two Pieces: *Select Active Style* and *Show Me*.
Select Active Style has 4 points in the shape of a square and two children. The first child *Rectangle* has an rectangle object in it. The second style *Triangle* has a triangle object in it.

Purpose:

This example will show how changing the active style in the piece *Select Active Style* affects the display in *Show Me*.
This example only changes objects, but points are also affected by the active style.

Steps:

- Display the *Select Active Style*

1. Highlight *Show Me*.
2. Click Show.

- Select *Select Active Style* as the active piece.

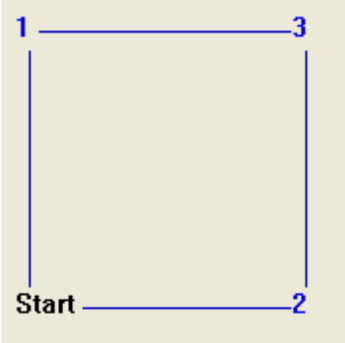
1. Highlight the Piece *Select Active Style.*
2. Under Active Style select *Select Active Style*.

Notice how the no objects are shown.

Show Me with Select Active Style as Active Style

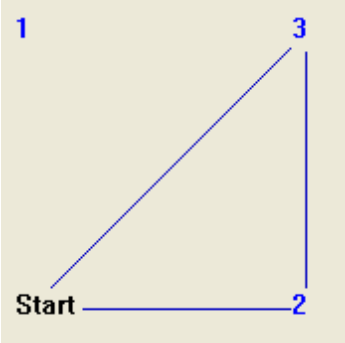
3. Under Active Style select *Square.*

Notice how the square object is shown. It was created in the style *Square.*



Show Me with Square as Active Style

4. Under Active Style select *Triangle.*
Notice how the triangle object is shown. It was created in the style *Triangle*.



Show Me with Triangle as Active Style

13.5 Tutorials

For more examples go through the tutorials. Select in the Help menu Tutorials and the Tutorials PDF file will open. All the examples of the tutorials are saved in My Documents/Patternmaker/Personal files/Designers/Tutorials. Selecting the Open file command will browse you to this folder.

The tutorials are:

1) Drafting a Hood
Get started drafting something easy.

2) Translating Drafting Instructions
How to convert drafting instructions into Macro Generator.

3) Drafting Ladies' Pants
A complicated draft.

4) Editing in PatternMaker
Adding pleats to the pants by cutting in PatternMaker.

5) Adding Style Options
Drawing a sleeve to the bodice and adding sleeve options (long or short sleeve). Adding two necklines.

6) Pattern Markings
Notches, Seam Allowance, Text and groups.

7) Creating Commercial Files
Measurement Tables and translating into other languages.

8) Advanced Style Options
Adding Style Pictures and Style specific points. Using Style Exclusions to create a cuff that isn't created with a short sleeve. Adding a cuff depth measurement that is only displayed with the cuff style.

9) Advanced Programming
Show and hiding darts using logic, and three techniques: modifying a measure, modifying a point and hiding an object.

13.6 Code Point Example

Code Points provide a remarkable amount of flexibility.
The downside is they are difficult to use.
A code point can be used to modify any point or measure that comes before it.
This example shows how to do that.

We will create a point to be modified:

1) Point->Add->Coordinate
2) Name: PointToChange
3) Click Ok.

Create a measure to modify. It will be a math measure because we don't need any calculation and don't want a prompt.

4) Measure->Add->Math
5) Name: MeasureToChange
6) Click Ok.

Now create the code point that will modify them:

7) Point->Code
8) Name: Code Point
9) In the List, select: `@Point[PointToChange]`
10) For Item, select: `@Point[PointToChange].X`
11) Click Paste.
12) Modify the code area so it reads:

```
@Point[PointToChange].X = 10;
```

What did we do?
The List drop down contains a list of all the points in the drawing. If the Type drop down had Measure selected it would have a list of all the measures in the drawing.
Item has a list of all the valid accessors for the point. To change the X value use the .X accessor. This could could be typed in by hand but it is more convenient to use paste in order to avoid typing.

Next set the Y Value to 12:

13) In the List, select: `@Point[PointToChange]`
14) For Item, select: `@Point[PointToChange].Y`
15) Click Paste;

```
@Point[PointToChange].X = 10;
@Point[PointToChange].Y = 12;
```

Now to change the measure:

16) In Type, select Measure.
17) Click Paste.
18) Modify the code area so it reads:

```
@Point[PointToChange].X = 10;
@Point[PointToChange].Y = 12;
@Measure[MeasureToChange].Value=5;
```

Notice the default values of the List drop down and Item drop down were what we wanted.

19) Click Ok.

PointToChange has been moved in the drawing. If you inspect MeasureToChange, the value is now 5.

To view this example open CodePointExample.mg4

13.7 Customize Example

Customizing can be used for two purposes:

- Adding specialized code for a specific macro
- Prototyping a new Widget.

Most of the time all that is needed is to create a function to perform calculations.
Another purpose is to create a table that is used.
This example creates a simple table. The same effect can be done using logic 140.

We will create a table with three elements in it. The table will contain the values 1, 4 and 9.
The function change_size() will read a value from the table and put it into a measurement. The finished file is CustomizeExample.mg4

Create an array:
1) Customize->New Declaration
2) Name: Size
3) Code: `double Size[3];`
4) Click Ok.

Initialize the array:
5) Customize->New Initialization
6) Name: Size
7) Enter into the code:

```
Size[0] = 1;
Size[1] = 4;
Size[2] = 9;
```

8) Click Ok

Create the function with the logic:
9) Customize->New Function
10) Name: Size

11) Enter into code:

```
change_size(double measure, double output)
{
  double index;

  if (Var[measure] < 10)
    index = 0;
  else if (Var[measure] < 20)
    index = 1;
  else
    index = 2;

  Var[output] = Size[index];
}
```

12) Click Ok.

Create a measurement to use as input to the table:

13) Measure->Measurement Table
14) Click New.
15) Name: Input
16) Value: 15
17) Click Save.
18) Click Ok.

Create a measurement that is the result of the table :

19) Measure->Add Math
20) Name: Output
21) Click Ok.

Create a code point that calls the function we created using the input and output points:

22) Point->Code
23) Name: Code
24) Code: `change_size(@Measure[Input], @Measure[Output]);`
25) Click Ok.

To test it, change the value of Input and view the value of Result.

	Result
Input < 10	1
10 < Input < 20	4
20 < Input	9

13.8 Cascade measure

Cascading measures are difficult to explain A good example is worth a thousand words.

Open the MacroGen file "CascadeMeasure.mg4"

1) Open the style Shape. You'll see a house.
2) Point->Logic
3) Verify Show All Points is checked.
4) Highlight true.
5) Right click *Height = Height + 10
6) Uncheck Cascade.
7) Click Done (Cascade Form).
8) Click Done (Logic Form).
9) The house turned into a square.

Why? We have the following.

```
Height = 10
Width = 10
```

CascadeMeasure = Height - Width

When Cascade is checked CascadeMeasure is calculated when Height is modified in the logic. When we add 10 to Height then CascadeMeasure = 10 since 20-10=10.

When Cascade is unchecked CascadeMeasure is not recalculated when Height is modified. This means CascadeMeasure=0 since 10-10=0

The distance between 4 and 5 is CascadeMeasure. When Cascade is checked point 5 is 10 units above point 4 and the shape is a house. When Cascade is unchecked point 5 is on point 4 and the shape is a box.

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- W -

- X -

- Z -

MacroGen 4.5

dinsdag 17 februari 2015